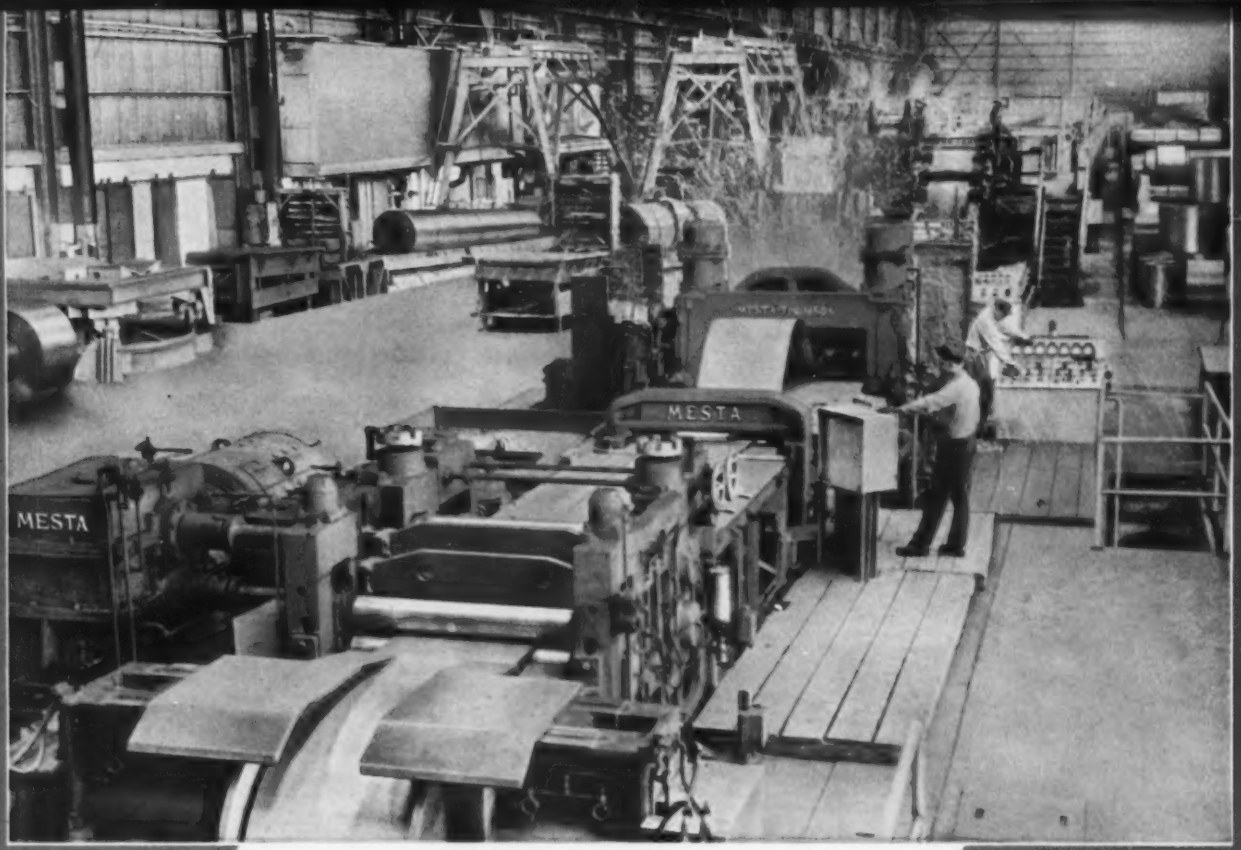
The IRON AGE
July 24, 1958 A Chilton Publication The National Metalworking Weekly

What's the Future For Numerical Controls? P. 77

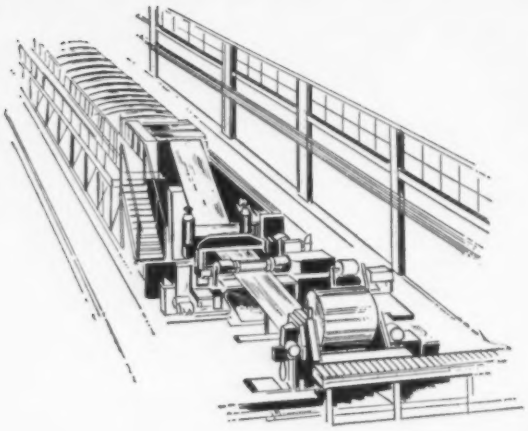
Why "Right-to-Work" Is Gaining Ground – P. 39
New Weighing System Centralizes Scale Data – P. 81
Digest of the Week P. 2-3



MESTA 48" Continuous Pickling Line with Primary and Secondary Processors, Flash Welder, Up-Cut Shears, Side Trimmer and Up-Coiler.

Continuous PICKLING LINES

DESIGNED AND BUILT BY MESTA



Designers and Builders of Complete Steel Plants

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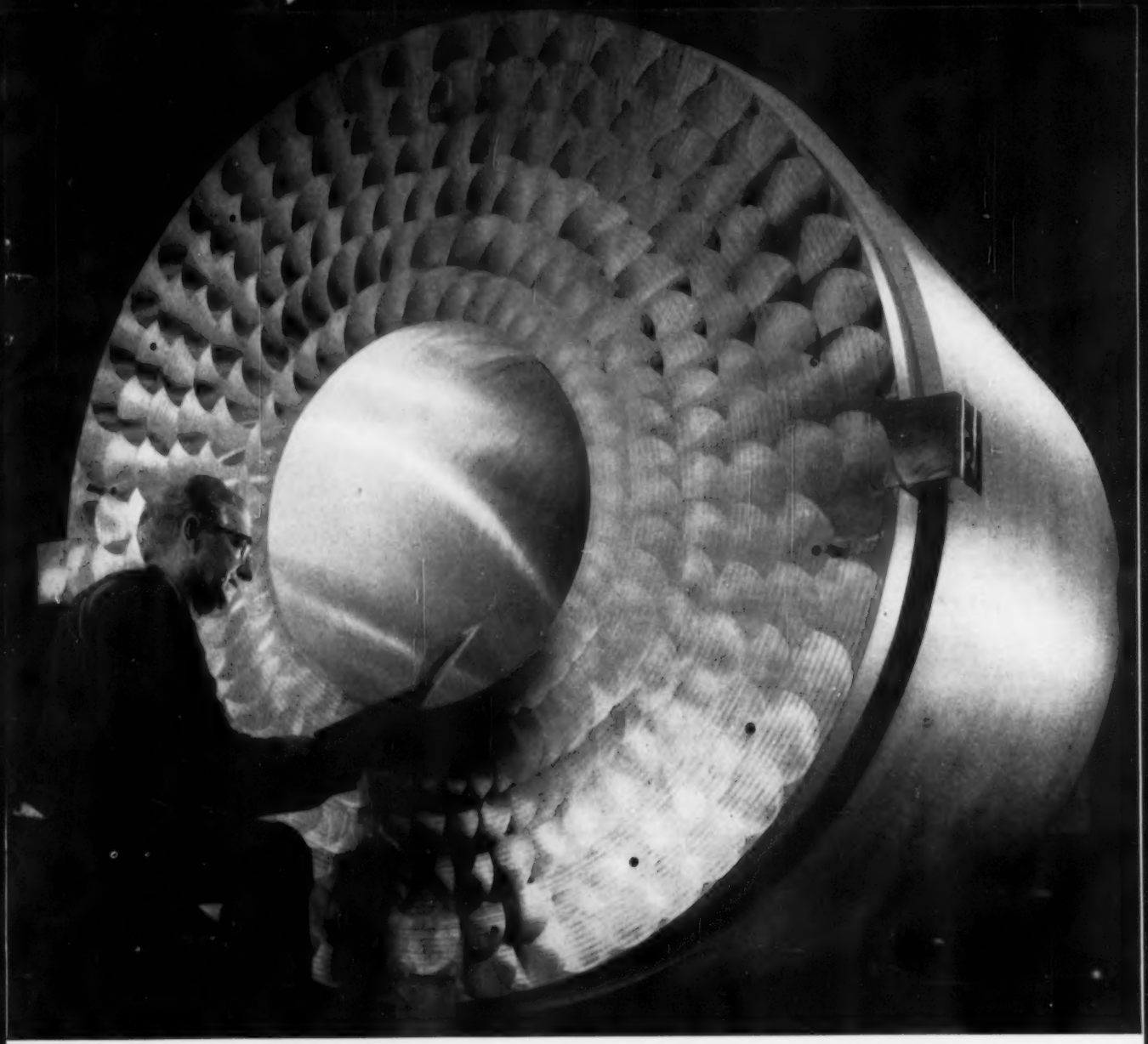
PITTSBURGH, PENNSYLVANIA



Three Layers of Forgings in 50-Ton Billet Container

This husky billet container, a product of Bethlehem's forge and machine shops, was recently completed after months of exacting work. It will be part of a 12,000-ton extrusion press designed and built by the Lombard Corporation, Youngstown, Ohio.

Though it looks like an ordinary one-piece forging, its appearance is deceptive. Actually, it's an assembly consisting of *three* cylindrical layers —an outer housing, an intermediate liner, and an inner liner. To get that one-piece effect, the most precise machining was required on the three components. Then came shrink-fitting—one of the touchiest steps of all—and later still, the finishing operations.

The container assembly as you see it here weighs 50¾ tons. Its OD is 7 ft; ID, 32 in.; length, 6 ft 3 in. The two inner members are of chrome-molybdenum-vanadium-tungsten hot-work steel; the outer member is a chrome-molybdenum-vanadium steel.

Bethlehem facilities are always available for jobs of this nature, and we solicit your inquiries. We are especially well equipped to handle "unusual" orders, as well as the more conventional types. Remember, Bethlehem makes every kind of forging—large, medium, small—and offers precision machining that is unsurpassed anywhere.

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The IRON AGE

July 24, 1958—Vol. 182, No. 4

Digest of the Week in

*Starred items are digested at night.

EDITORIAL

A Spade Is a Spade: What Cards Do We Hold? 7

NEWS OF INDUSTRY

*Special Report: Why 'Right-to-Work' Is Gaining Ground 39
New Coil Conveyor Saves Money 41
*Mid-East Blowup a Market Alert 42
*Reds Push Machine Tool Exports 44
U. S. Tool Storage Costs Mount 45
*Lower Freight Costs Are Coming 46
The IRON AGE Salutes 51
Men in Metalworking 67

FEATURE ARTICLES

*What Does the Future Hold for Numerical Controls? 77
*Weighing Enters New Fields 81
*Dry Binder Aids Core Baking 84
*Welding Vinyl-Metal Laminates 86
*New Styrene Forms Hard Finishes 88
*Valves Meet Power Demand 90

NEWS ANALYSIS

Newsfront 37
Report to Management 53
*Automotive 54
*Washington 59
*West Coast 61
*Machine Tool 63

MARKETS & PRICES

*The IRON AGE Summary 105
*Purchasing 106
Steel Product Markets 108
Index to Prices 109
Iron and Steel Scrap Markets 110
Nonferrous Markets 114
Clearing House 126

REGULAR DEPARTMENTS

Letters 9
Fatigue Cracks 11
Coming Exhibits, Meetings 13
Technical Briefs 92
Free Literature 94
New Equipment 101

INDEX TO ADVERTISERS 131

NEWS ARTICLES

RIGHT-TO-WORK

Gains Momentum — Six states will vote on anti-union shop this fall. Eighteen already have right-

to-work laws. Unions are on the defensive in state referendums, despite national political strength and Washington influence. P. 39

MID-EAST CRISIS

Watch Your Inventories — This is no time for stock cutting. Smart buyers are taking a second look at their inventories. Alertness could pay big dividends. P. 42

LABOR LAWS

Watered Down — Kennedy-Ives bill won't get by the House. Compulsory registration of union pension and welfare plans apparently is out for this session. Inspection on demand is the most likely result. P. 59

MISSILEMAKING

Trends Predicted — Even if government gives subcontractors

Metalworking

NUMERICAL CONTROLS: Discussing prospects for new numerically-controlled unit are (l to r): J. K. Fulks, Executive Vice President, Ex-Cell-O Corp., G. S. Knopf, Manager-Industrial Control Sect., Bendix Aviation Corp., and D. H. McIver, Ex-Cell-O's vice president, industrial sales. P. 77

lead in missile building West Coast aircraft firms won't be out in the cold. They plan to ally themselves with other suppliers to keep their share of the work. P. 61

TOOL TOLERANCES

Trend Is Tighter — Tool users are thumping for more precision items that don't require frequent repair. Gagemaker says the answer is closer tolerances. P. 63

FEATURE ARTICLES

DIGITAL WEIGHING

Enters New Fields—The newest scales transmit weight data electronically. Chances for human error are eliminated. Such information can be programmed directly via digital language into process control, billing, receiving, or stock record routines. P. 81

COREMAKING

Dry Binder Aids Baking — A new dextrose core binder is cutting core baking time, speeding shakeout, and improving casting quality. The corn-sugar binder contains about 6-pct ammonium sulphate, a catalyst which transforms the corn sugar into a tenacious resinous substance during the bake. P. 84

WELD VINYL-METAL

Without Marring Plastic—Vinyl-clad metal, while easy to cut and form, has been difficult to join without marring the finish. New welding techniques permit welding of laminates so that the metal melts on one side and stays cool on the other. P. 86

STYRENE-BUTADIENE

Form Hard Finishes — Designed as a binder for industrial paints, a new styrene-butadiene paint latex forms a variety of easily applied water-base finishes. It does away with dangers of solvent fires and toxicity problems. P. 88

ENGINE VALVES

Meet Power Demand—As engine performance improves, valves have to withstand more severe conditions of high temperatures and corrosion. Combined research has come up with a stainless grade that has the combination for the job. P. 90

MARKETS & PRICES

STATION WAGON SALES

Bucking the Trend — A larger portion of the auto dollar is spent each year for station wagons. Their sales growth is found in nearly all cars from the low to the high price range. P. 54

RED TOOL EXPORT

Picking Up Speed — Machine tools from Poland, East Germany, and Czechoslovakia are growing threat in the world market. Eastern bloc nations turn out good equipment, expert says. P. 44

LOWER FREIGHT COSTS

Coming Next Month—Industry's freight bill will drop about half a billion a year when excise tax on transportation dies in August. However change only cancels out a recent rate hike. P. 46

STEEL USERS' DILEMMA

Mid-East Crisis Worrisome—The Mid-East blowup is forcing steel users to review their inventories. Some buyers already are moving quietly to bolster their market position. P. 105

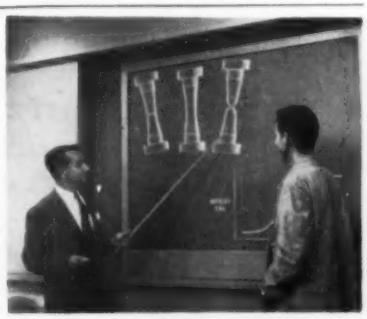
MOTOR BUILDERS

Facing Cost Squeeze — Motor makers would like to hold the price line but find it difficult. Their choices are passing increased costs on to customers or getting caught in a profit pinch. P. 106

NEXT WEEK

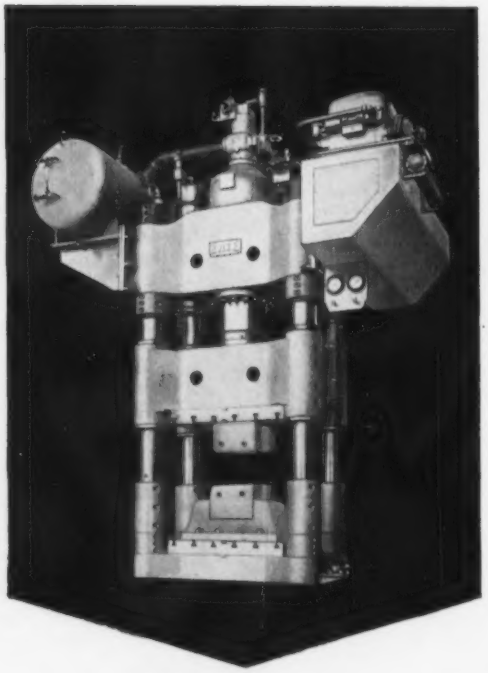
EMBRITTLEMENT

Avoid with New Method — A simple baking procedure rids cadmium-plated steel of the embrittling effects of hydrogen. Next week's feature will point out how it takes no additional equipment and only a minor change in routines.



PRESS or HAMMER?

..which is best for your forged product?



When it comes to open die forgings, there are as many different opinions on what equipment is best as there are open die forge shops and open die forgings.

But, before adding any new equipment, the wise forge shop operator talks with Erie Foundry Company . . . the firm that makes the best in *both* hammers and presses!

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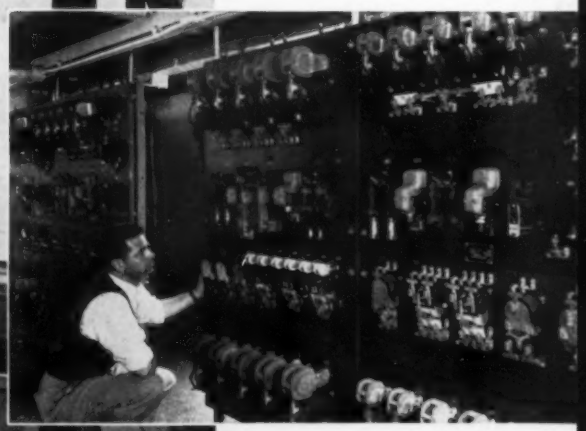

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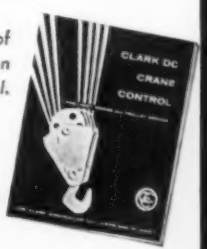

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A Spade Is a Spade
What Cards Do We Hold?

It would be easy to say that landing our Marines in Lebanon was in the cards when Mr. Truman kept General MacArthur from driving the Red Chinese beyond the Yalu River.

It is easy, too, to say that Allen Dulles' Central Intelligence Agency should be investigated for its lack of intelligence (no pun intended). But perfectionist counter-intelligence requires dedicated men and women who are not afraid to die for their country in time of peace. Maybe we haven't enough such people.

Perhaps, too, the State Department ought to be alerted to advice from its ranks: This seems never to reach John Foster Dulles. For instance, the man who wrote Ike's Canadian speech should be psychoanalyzed. There was no point in insulting our friendly neighbor whom we need greatly.

It would be easy also to go on and on about how meandering our foreign policy seems to have been in the past several years. We appear to have blundered from one crisis to another.

But that type of carping is out the window. Perhaps we did take a horrendous gamble. Maybe we will be charging at Arab windmills and thus making basic enemies for ourselves. But those who say this have no corner on the brain market. They could be wrong.

It was but a few hours ago that we were beefing about Ike's leadership: That he could not make up his mind. Well, he has made it up—and fast. He and a few others know, too, that something else is in the picture. Now that the die is cast let's call a spade a spade: What cards do we hold?

We have been living it up. Gracious living has been ours for years. Now the check is being handed us. The right to live as we please costs something. The price is patriotism, fortitude, and facing the facts as they are in the world.

This is no time to spend all our time worrying about the sack dress, the TV programs, the extent of juvenile delinquencies, the proper wage and price levels, and chasing the dollar. All of those things are important; but not so important as the stamina we must all show in the future.

Our country has made one of its most serious steps since lend-lease was inaugurated. You and I may criticize, argue, and find fault. But in the last analysis we have to realize that the price of being a free democracy comes very high.

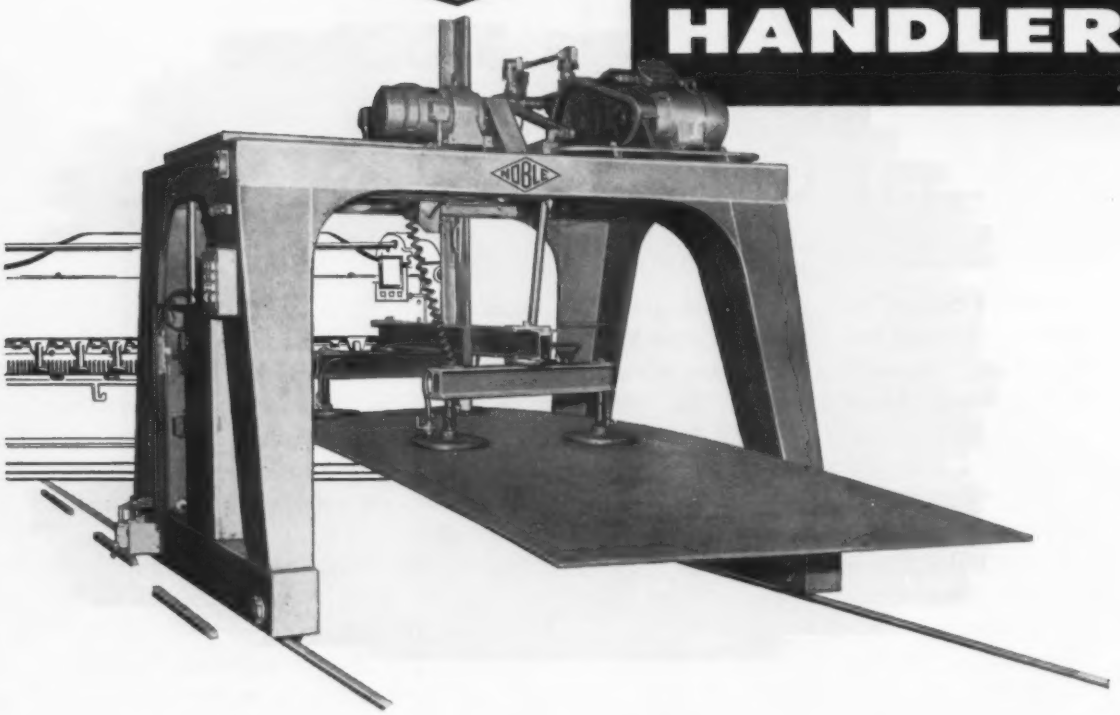
We may be about ready to pay the price. Let's not cry. That would be devastatingly weak, whimpering, and un-American.

Tom Campbell

Editor-in-Chief

How to Make Your Shear a Production Tool

–ADD A NOBLE *Automatic* PLATE HANDLER



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Russian Smokescreen

Sir—I wish to compliment Tom Campbell on his fine editorial in the July 10 issue (Revulsion Compounded: Reaction to Latest Red Move). He has certainly hit the nail squarely on the head. Al Capone was peanuts compared to Khrushchev.

Freedom is our responsibility, I hope to God we are up to it. Your editorial was most encouraging.—D. Jones, Purchasing, Dunham-Bush, Inc., Marshalltown, Iowa.

Sir—Your editorial of July 10 on what we must expect from the Russian and Chinese dictatorships strongly drives home facts that should be kept ever ready in our mind for intelligent thinking on the problems of international relations. I hope it is retained by many readers.—C. B. Haines, Vice-Pres., Lamport, Fox, Prell & Dolk, Inc., South Bend, Ind.

Sir—I admire your keen sense of political judgment, your courage, and your wisdom in telling people about the danger of becoming poisoned by the absurd ideas of coexistence with the Soviet and appeasement of Kremlin gangsters.

When I came to this country in 1949 and told my new friends about the misery and suffering of Estonian people in 1940-1941, expressions on faces revealed doubt, surprise, or just plain ignorance,

On my return from Korea in 1952, I expected to find a radical change in this "Let George Do It" attitude. Again, this was not the case. And even now, working among professional people, I have sometimes to listen to "peaceful coexistence," and "peace at all costs"—ideas.

All people must be made aware of the danger that is shifting itself with increasing momentum toward the countries of free men. Summarizing the ideas and thoughts contained in your editorials and presenting them to the general public in the form of a book or a series of articles will be a great service to America.—O. Paul, Schenectady, N. Y.

Industry Taxes

Sir—Confirming my telephone conversation of this morning we would like to order 2000 reprints of the article "Industry Tax Suffers a Setback" on p. 29 of the July 3 issue of The IRON AGE.

We plan to use the reprints for mailings to our industrial prospects. I want to take this opportunity to compliment your editor, Robert Schulin, for his fine article and factual treatment of the subject. It was a pleasure to work with him.

Please accept our thanks for IRON AGE'S timely publication of the article and the national publicity it will give to the improved tax climate for industry in Baltimore City.—G. S. Creighton, Director, Industrial Bureau, Baltimore Assn. of Commerce, Baltimore, Md.

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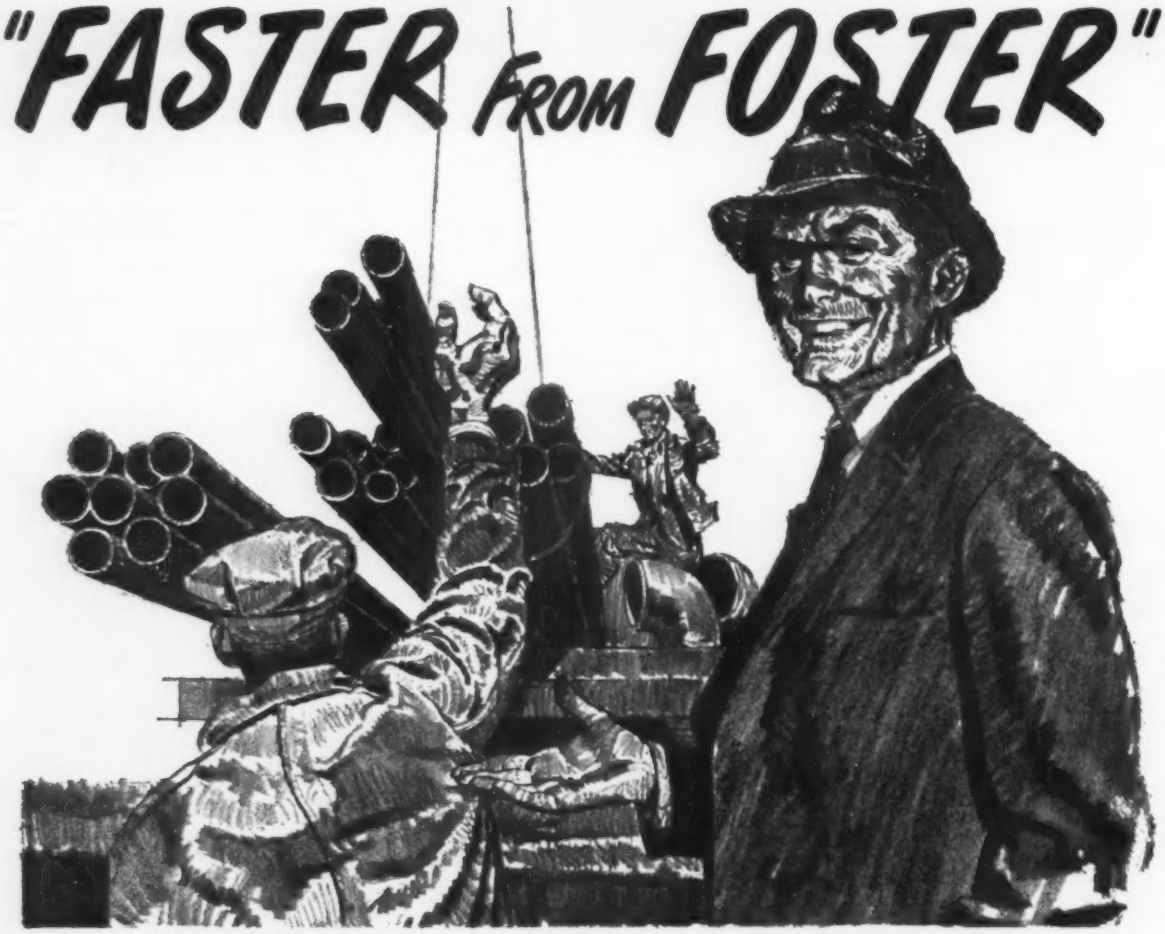

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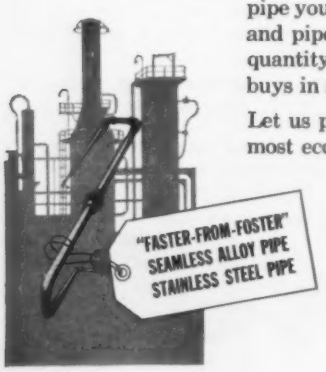

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Changing World

Having some time-tested facts we count on helps in these topsy-turvy days. Now, however, two more illusions have been shattered.

In our more athletic days bowling alleys were always pretty noisy. But much of the din may be on the way out. Three firms have combined their talents in a new bulletin titled, "Noise Control for Bowling Lanes." The report—designed to aid bowling lane owners in recognizing and controlling noise problems—is based on the experience of Brunswick-Balke-Collender Co., bowling equipment makers, Reynolds Metals Co., and Bolt Beranek & Newman, Inc., acoustical consultants.

Then you may recall the old saying, "You can't repair the roof when it's raining and when it's dry you don't need to." Well forget that one, too. According to the Monroe Co. of Cleveland you can repair the roof when it's raining—or when it's full of melting snow. The firm has two products which can be used in roof maintenance despite outside conditions.

One is an all-weather roof coating called Liquid Damp-Dek. The other is patching cement for wet-weather repairs called Plastic Damp-Dek.

It's hard to know what to believe in anymore.

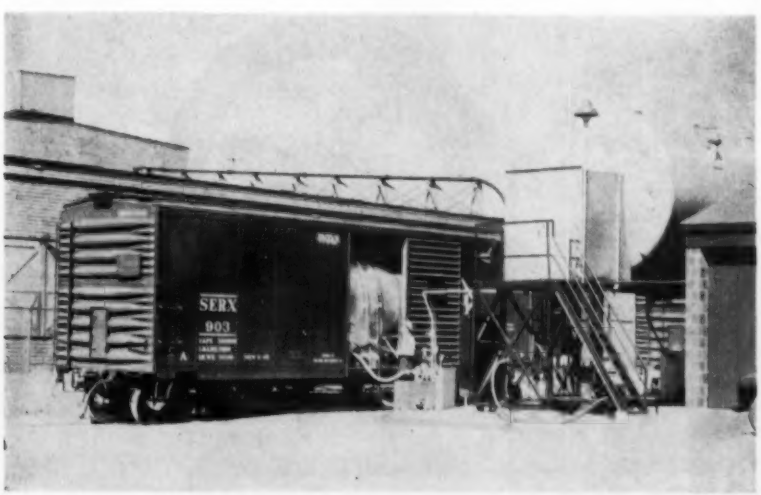
March of Progress

On the corner of 59th St. and Madison Ave. in New York City there's a sparkling new newsstand. And behind its construction is an interesting story.

It replaced an old weather-beaten booth, which for 21 years had fitted in well with its environment. Fitted in until the new ultra-modern CIT Financial Corp. Building was erected.

CIT officials, noting the contrast between new and old, finally called in their architects and the newsstand owner. There was some talk and a decision that pleased everyone.

Now papers are peddled from probably the first architect-designed newsstand. It features easy-sliding aluminum windows and an aluminum extension roof to eliminate rain-soaked papers.



BOX TANK CAR: Linde Co., Div. of Union Carbide Corp., has developed this tank-in-box car for transporting liquid oxygen, nitrogen, and argon.

When Accuracy Counts...

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Olin Aluminum Tailors Extrusions to your Exact Requirements

Olin Aluminum is outstandingly equipped to produce aluminum shapes to meet your exact needs. It makes available to you the extensive facilities of a fully integrated source of supply – one that assures a steady flow of quality materials.

In producing these materials for you, we devote unusual attention to the precise details of your specifications. At every stage of production, we carefully inspect the work in progress. And we follow through with the same thoroughness to the packaging of your order – tailoring shipments to save handling time in your plant.

Produced and packaged right, your extrusions also get to you quickly. Speedy deliveries from Olin Aluminum can help you cut your inventory costs. For immediate service, write: Metals Division, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, N. Y.

OLIN MATHIESON CHEMICAL CORPORATION
OLIN ALUMINUM

Symbol of New Standards of Quality and Service in the Aluminum Industry

® AND "OLIN ALUMINUM" ARE TRADEMARKS

COMING EXHIBITS

Western Packaging & Materials Handling Show—Aug. 11-13, Civic Auditorium, San Francisco. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Iron & Steel Show—Sept. 23-26, Cleveland Public Auditorium, Cleveland. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22, Pa.)

Western Tool Show — Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metals Show—Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastic Show — Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

SEPTEMBER

National Petroleum Assn.—Annual meeting, Sept. 10-12, Hotel Traymore, Atlantic City, N. J. Society headquarters, Munsey Bldg., Rm. 958, Washington, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 22-23, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland 13.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

(Continued on P. 16)

A RUTHMAN

GUSHER Coolant Pumps

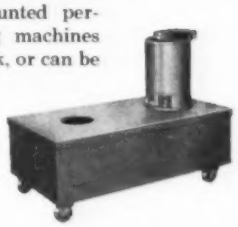
There is a type and model of Ruthman Gusher Coolant Pump to fit virtually every requirement; Immersed Type, Pipe Connected, Flange Mounted, and Shaft or Pulley Driven. Precision built of the best materials, Gusher Pumps offer you very distinct advantages. The shafts are electronically balanced to reduce vibration and wear. There are no seals to require constant replacement. No packing or priming is needed. Capacities from 1/30 to 7½ H.P.

Model UL

PUMP for every

GUSHER Tank Units

Offering you great versatility of movement; Gusher Tank Unit Coolant Pumps can either be mounted permanently on metal-cutting machines without built-in coolant tank, or can be equipped with casters for complete portability. Every metal working plant—large or small—should have a Gusher Tank Unit for emergencies. Capacities 1/30 to 7½ H.P. 4 gal. tank capacity and up.



Model 9050
Tank 52-4808

APPLICATION

RUMACO Seal Pump

Precision built Rumaco Pumps offer you the same advantages built into all Ruthman Pumps. A seal type pump, the Rumaco can be mounted anywhere. Rumaco pumps are adaptable to a wide variety of applications where a centrifugal pump is needed. Capacities 1/10 to 7½ H.P.

Model 5-3

Before you buy — compare our quality . . . prices.

Write for catalog

THE Ruthman MACHINERY CO.

- COOLANT PUMPS
- CIRCULATORS • AGITATORS
- MOLTEN METAL PUMPS

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ALLIS-CHALMERS . .

Products for steel: motors, m-g sets, rectifiers, control, pumps, *Texrope* drive equipment, crushers, grinding mills, screens, transformers, unit substations, switchgear, circuit breakers, turbine-generators, voltage regulators, blowers, compressors, condensers, and water conditioning equipment.

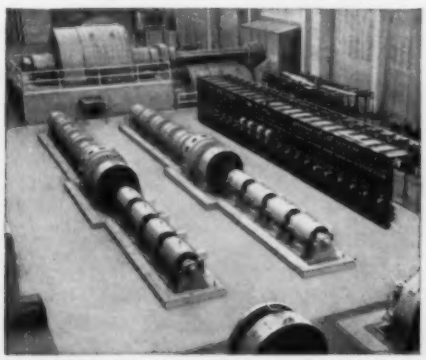
ALLIS-

in Step with STEEL

The blooming mill

Maximum electrical efficiency is assured in blooming mill operations where Allis-Chalmers equipment is used. From switchgear to drive motors, Allis-Chalmers offers a tailored system — engineered by mill experts and designed to keep high quality blooms rolling fast and accurately.

From mine to final processing—Allis-Chalmers equipment is in step with the increasing tempo of expanding steel production. Contact the nearest A-C office in your district, or write Allis-Chalmers, Milwaukee 1, Wisconsin.



Blooming mill motor room view shows components of the Allis-Chalmers electrical package. Switchgear, control, constant and variable voltage motor-generator sets, *Regulex* motor-generator sets, liquid rheostat, and twin drive motors are designed to work together for peak mill output.

Regulex and *Texrope* are Allis-Chalmers trademarks.

CHALMERS

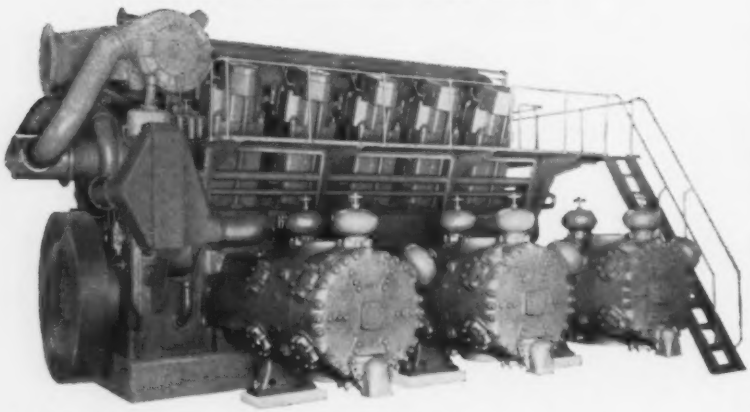
A-C ALLIS-CHALMERS

A-5411

VALVOLINE TECTYL

rust preventives protect

Cooper-Bessemer Engines



Large Cooper-Bessemer multi-cylinder, V-angle compressor engine, showing three compressor cylinders.

Tectyl compounds protect vital parts . . .

The crankshaft is the backbone of all diesel or piston type engines. All Cooper-Bessemer crankshafts are protected with Valvoline Tectyl 400-C while in storage or in transit.

The following Valvoline Tectyl Rust Preventives are regularly used by Cooper-Bessemer:

Tectyl 867 —Protects all ground and polished precision parts, such as compressor valve plates, piston pins, bearing shells, etc. . . . also for compressor piston rods being processed for replacement in the field or for storage. The use of Tectyl 867 has reduced expensive production delays due to corrosion.

Tectyl 502-C—A rust preventive, soluble in the engine lubricating oil . . . it is pumped through the lubricating system, thus protecting the crankshaft, bearings, and all the internal lubricated parts of the assembled engine.

Tectyl 400-C—Used for outdoor long term exposures . . . and when preparing engines and compressors for shipment, all exposed, unpainted, machined surfaces are coated with *Tectyl 400-C.*

Write TODAY for information and advice without obligation. Describe metals and types of exposure
DEPT. IA-758

Valvoline Oil Company • FREEDOM, PENNSYLVANIA

Division of ASHLAND OIL & REFINING COMPANY

EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute — Annual meeting, Sept. 25-27, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.—Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute — Annual meeting, Sept. 28-Oct. 2, The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

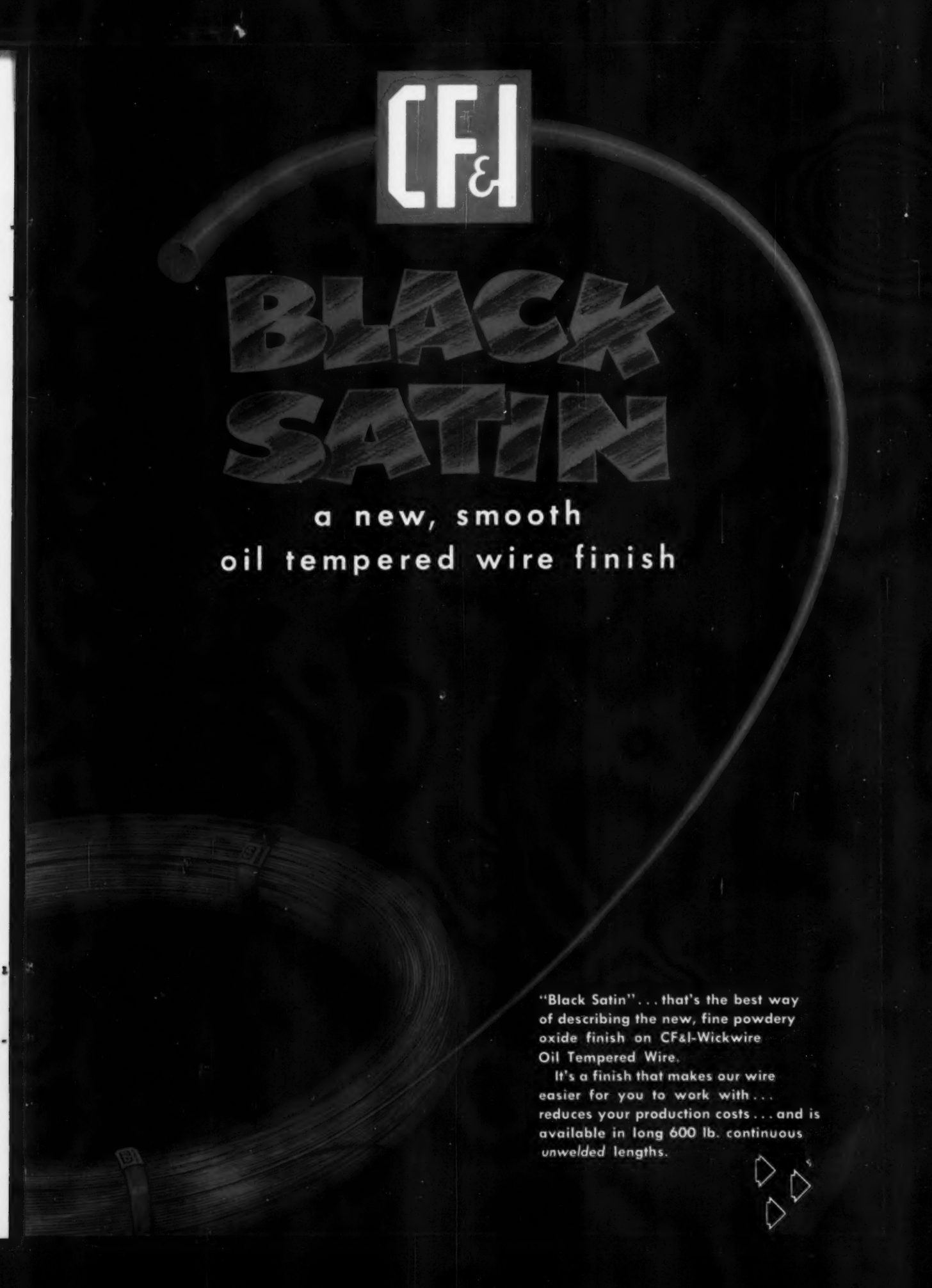
American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.

CF&I

BLACK SATIN

a new, smooth oil tempered wire finish



"Black Satin"... that's the best way of describing the new, fine powdery oxide finish on CF&I-Wickwire Oil Tempered Wire.

It's a finish that makes our wire easier for you to work with... reduces your production costs... and is available in long 600 lb. continuous *unwelded* lengths.

BLACK SATIN

an improved Oil Tempered Wire finish available from CF&I-Wickwire

This powdery finish acts as a lubricant during your coiling and crimping operations. There are no large surface scales to "flake-off". Thus, constant readjustment of your original setup is reduced during production runs. The quality and quantity of your output will remain high without expensive downtime.

Uniformity Reduces Production Costs—Because our Black Satin finish is extremely uniform from one end of a coil to the other, from coil-to-coil, *and* from lot-to-lot, setup time is minimized. Your output per shift will increase as your equipment will not have to be altered to cope with the varying physical properties of the finish occasionally encountered in coils of Oil Tempered Wire. Scrap losses are reduced because production machinery can run continuously —"stop and go" operations are almost nil when new coils are started.

Extra Large Coils Increase Output—CF&I can further help reduce production costs through our processing and packaging facilities which make it possible to provide extra long coils that lessen the number of setups and resulting scrap loss. If your product is one which (because of production volume or physical size) requires the use of large quantities of Oil Tempered Wire, use our large coils which are available from 16″ to 72″ in diameter. A full range of sizes, grades and finishes of Oil Tempered Wire is available in 600 lb. continuous *unwelded* lengths. Straightened and cut lengths from 6″ to 24 feet (or longer) can also be supplied.

If you are not set up to handle long-length coils, smaller weight packages are available.

Color Tag Identification Assures Quality—Every coil of CF&I-Wickwire Oil Tempered Wire is color-tagged with a complete record of its processing, testing and intended use.

Once you have selected the grade of Oil Tempered Wire that's best for your purpose, you can be sure of receiving the same quality on subsequent orders.

These tags, 3 of which are illustrated, show

Heat Number_____ Size_____

Tensile Strength_____

Date_____ Coil Number_____

Test Sheet Number_____

This identification system helps simplify your job of inventory control, in-plant storage, handling, and reordering.

When You Need Steel Wire Make CF&I Your Source of Supply. Oil Tempered Wire is but one of the many types of specialty wire produced by CF&I. To meet your needs and cut your costs, they can be supplied in a variety of packages: on returnable "Spiders" holding a single continuous length of wire weighing from 2000 to 4000 lbs.; on non-returnable "Spiders" with 500-700 lbs. capacity; in fibre-drums holding up to 600 lbs. of wire; in steel-strapped or wire tied coils (200 to 2000 lbs.) and in bare or paper-wrapped coils, or in 500 to 800 lb. capacity reels.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro • Seattle • Spokane **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia **CF&I OFFICE IN CANADA:** Montreal **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

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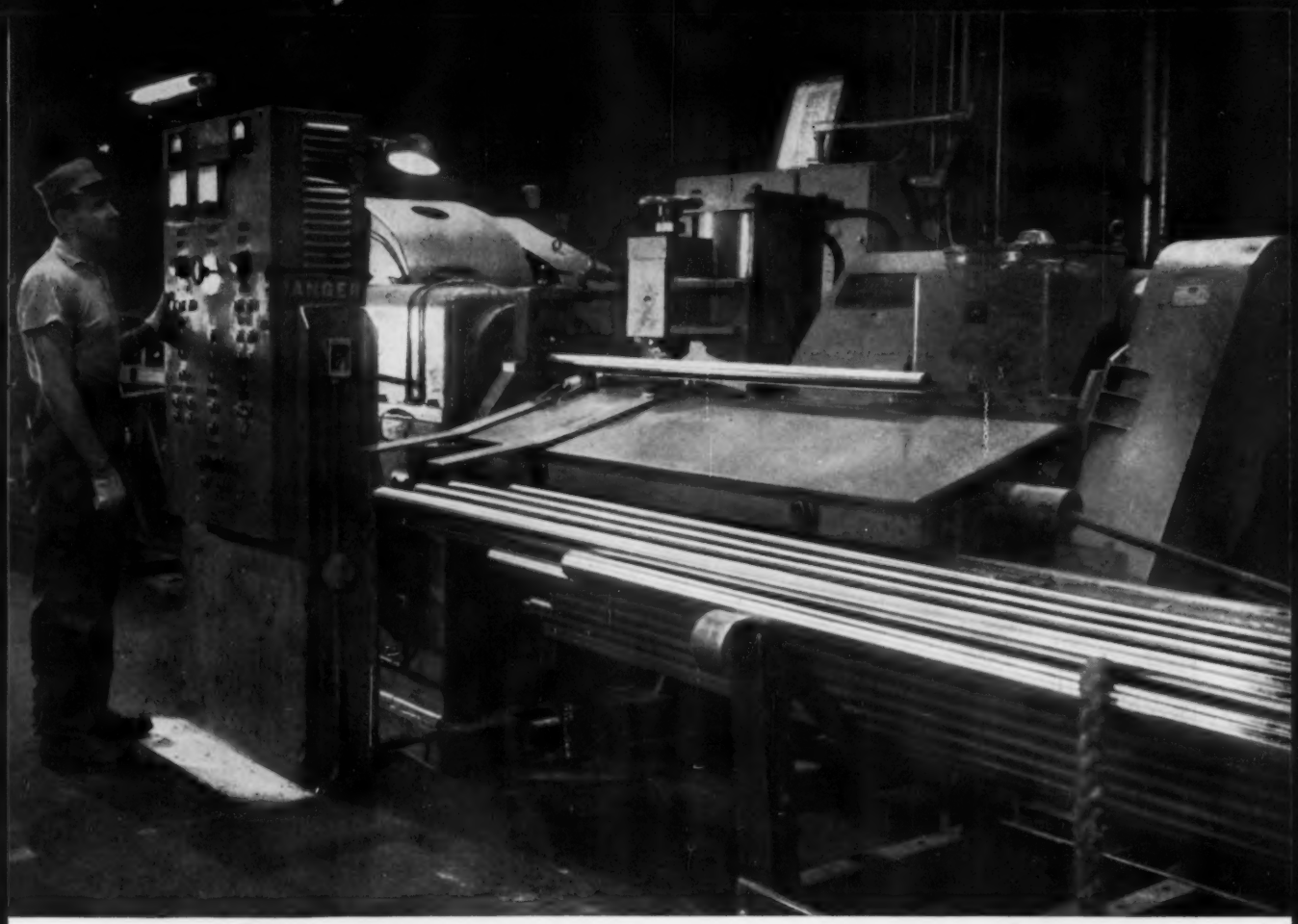


This Medart Centerless Bar Turner is a recent addition to the cold finishing department of an Eastern specialty steel mill. It is capable of turning at speeds of 12 feet per minute and removing as much as ¼-inch of metal.

BLAW-KNOX Medart gives you high speed centerless turning of small bars

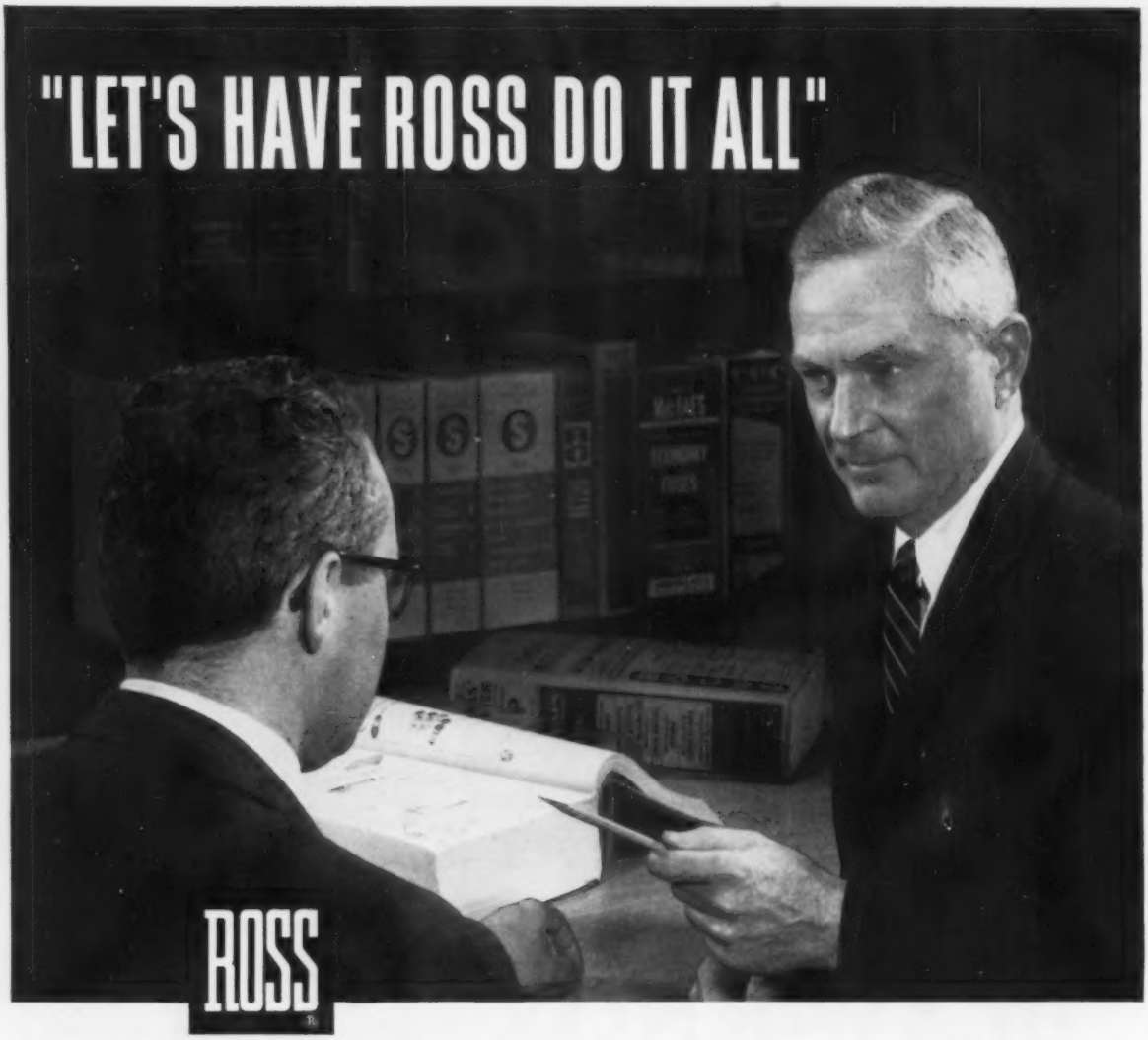
You can get high speed centerless turning of bars as small as ⅜-inch in diameter with the Blaw-Knox RFPD Centerless Turner. This single-pass, high production machine employs a patented torque-chipper which absorbs the twisting action imposed on workpieces of small diameters by cutting tools. The cutting tools are carried in a single head which is arranged so that the cutting is done at the point of positive support on the bar. Automatic centering without regard for variations in diameter of the bar is provided by a pneumatic device on the feed rolls. On the out-put side of the cutter head, the bar is gripped by a power driven carriage which draws the bar through the cutter head. This creates positive tension on the bar giving a superior finish.

The Blaw-Knox Medart RFPD Centerless Turner accommodates either Carbide or Oxide Tools. Its output, for any type of alloy steel or non ferrous metal is limited only by the ability of the cutting tool. What's more, the problem of chip handling and disposal has been simplified. The cutting tool scores the bar longitudinally so that chips are broken into easy-to-handle lengths. Blaw-Knox Medart Centerless Turners are available in sizes to accommodate bars from ⅜" to 9" diameter. Contact us for complete details, and technical assistance or service.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania



"they're the one outfit that builds every heat exchanger and condenser we need"

In heat transfer, assigning the whole project to Ross is not only the surest way to get the job done "right," but the quickest and most economical. Whether you're equipping an entire plant or a process, Ross is in the best position to assume complete responsibility and come up with carefully considered answers fully related to the total problem. Irrespective of function and condition, Ross designs and builds exchangers and condensers to meet *any* requirement.

With primary emphasis on engineering, 40 years devoted exclusively to heat transfer and well grounded experts ready to cope with *any* condition, Ross can handle the tough as well as the routine assignments for you.

Size and quantity pose no problems, either. A Division of American-Standard*, Ross Heat Exchanger recently opened a large new plant for the manufacture of giant surface condensers and other specially engineered exchangers. With smaller, standardized units being mass-produced at the original plant, Ross versatility and capacity are unmatched in the industry.

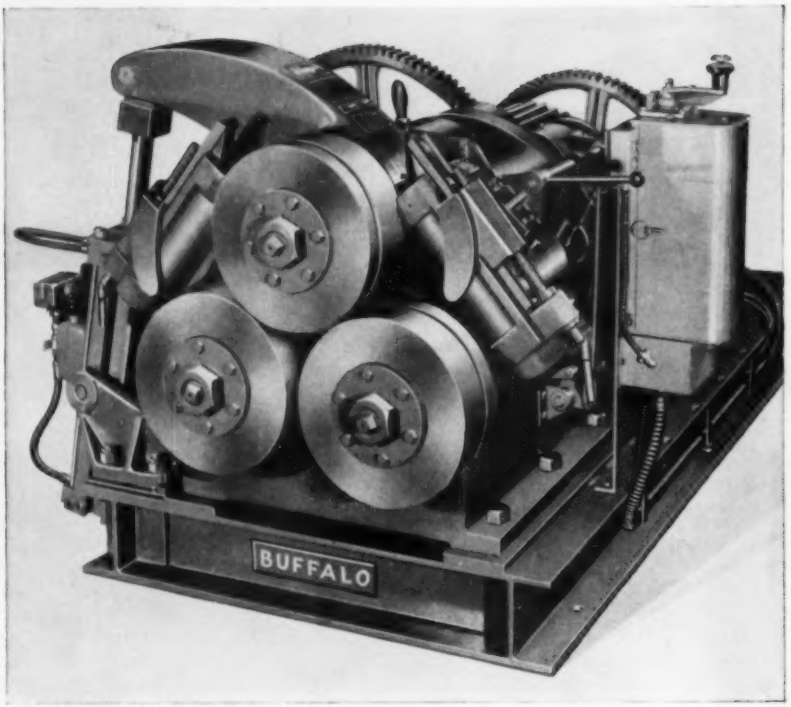
Regardless of the role of heat transfer in your operations, it will pay you and your other key management men to learn more about Ross . . . the one sure source for every exchanger and condenser you need. The full story on Ross men, facilities and products is available in our new illustrated booklet: "THIS IS ROSS—READY FOR YOU."

Write American-Standard, Ross Heat Exchanger Division, Buffalo 5, N. Y. In Canada: American-Standard Products (Canada) Limited, Station D, Toronto, Ont.

*American-Standard and Standard ® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
ROSS HEAT EXCHANGER DIVISION

Turn Your TOUGH Bending Jobs into PROFITABLE Operations with "BUFFALO" BENDING ROLLS



"Buffalo" Bending Rolls have taken production bending operations "out of the red" and put them "in the black" in literally hundreds of shops.

Fast, accurate and easily-operated, they are ideal for rapid circle, segment and spiral bending. Versatile, they handle angles, rounds, squares, tubes, beams, channels, flats and special shapes. Rolls are quickly and easily changed for different structural shapes and setup changes. With the unique "Buffalo" hydraulic adjustment for the top roll, the upper roll is effortlessly positioned or released to save vital setup time.

Exclusive "Buffalo" "Leg-In" Attachment saves you time and money! Difficult bending of angles leg-in is greatly speeded and simplified. Material will not twist or get out of square. This feature also acts as a gauge when rolling a number of circles to the same diameter.

Choose from a wide variety of "Buffalo" Bending Rolls in many sizes designed to handle a range of work from the heaviest members down to the smallest fabrication jobs. Call in your "Buffalo" machine tool dealer or use convenient coupon below.

"Buffalo" Machine Tools bring you the famous "Q" Factor — the built-in QUALITY which provides trouble-free satisfaction and long life.

ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

DRILLING
PUNCHING
SHEARING
BENDING

BUFFALO FORGE COMPANY

492 BROADWAY • BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

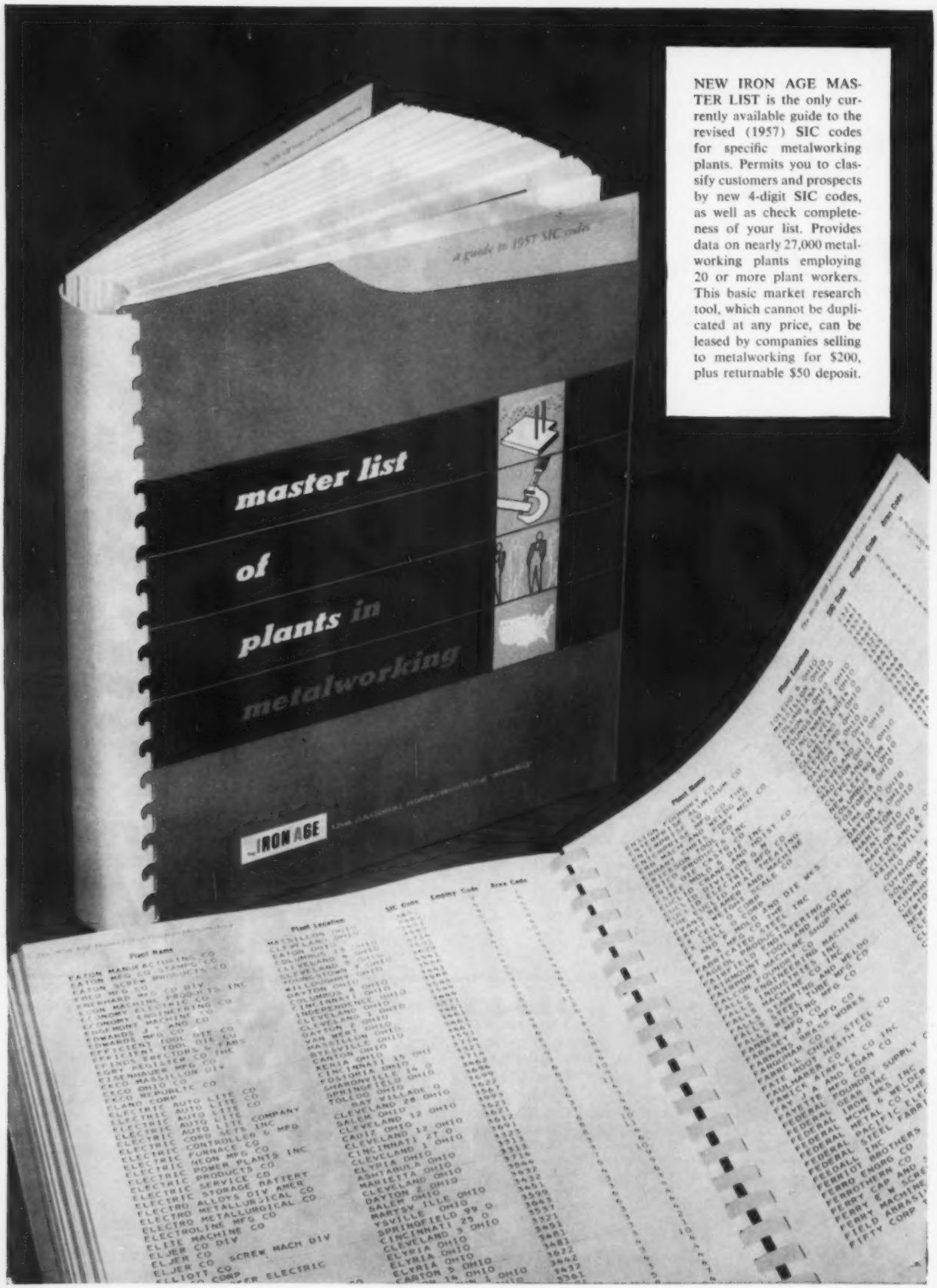
I'd like more information on how I can cut costs — increase profits with "Buffalo" Bending Rolls.

NAME _____ TITLE _____

FIRM _____

STREET _____

CITY _____ ZONE _____ STATE _____



NEW IRON AGE MASTER LIST is the only currently available guide to the revised (1957) **SIC** codes for specific metalworking plants. Permits you to classify customers and prospects by new 4-digit **SIC** codes, as well as check completeness of your list. Provides data on nearly 27,000 metalworking plants employing 20 or more plant workers. This basic market research tool, which cannot be duplicated at any price, can be leased by companies selling to metalworking for $200, plus returnable $50 deposit.

How to Identify Your Markets in Metalworking

IRON AGE's Master List of Plants in Metalworking permits you to classify by new SIC codes . . . check completeness of your customer and prospect list

Identifying the industries that make up your markets is the first step in any market evaluation program. If you have customers and prospects in metalworking, the IRON AGE Master List permits you to classify them by the new (1957) SIC codes, as well as check the completeness of your list. It is essential to have these new classifications, because all Government figures on metalworking gathered after Jan. 1, 1958 will be reported with the revised codes.

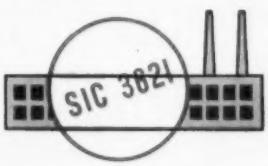
The IRON AGE Master List of Plants in Metalworking gives you name, city and state, 1957 4-digit SIC code, plant size code, and IA Industrial Area Code for nearly 27,000 metalworking plants employing 20 or more plant workers (94% of the market). The list is not intended for direct-mail purposes; it provides only enough information to enable companies selling to metalworking to check and code their customers and prospects.

Based on data which cost hundreds of thousands of dollars to develop, the IRON AGE Master List can be leased by companies selling to metalworking at $200, plus returnable $50 deposit. As an alternative, IA will code your customers and prospects for 10¢ a name.

The Master List is just one of the research tools available to you under the IRON AGE's new 4-point Marketing Assistance Program . . . a program designed to help companies selling to metalworking carry out the 4 steps listed below in meeting today's profit squeeze successfully and preparing for tomorrow's new wave of expansion.

For complete details, contact your IRON AGE representative.

How to Get More for Your Marketing Dollar in Metalworking



1. Identify the industries that make up your markets

2. Evaluate market potential of each industry

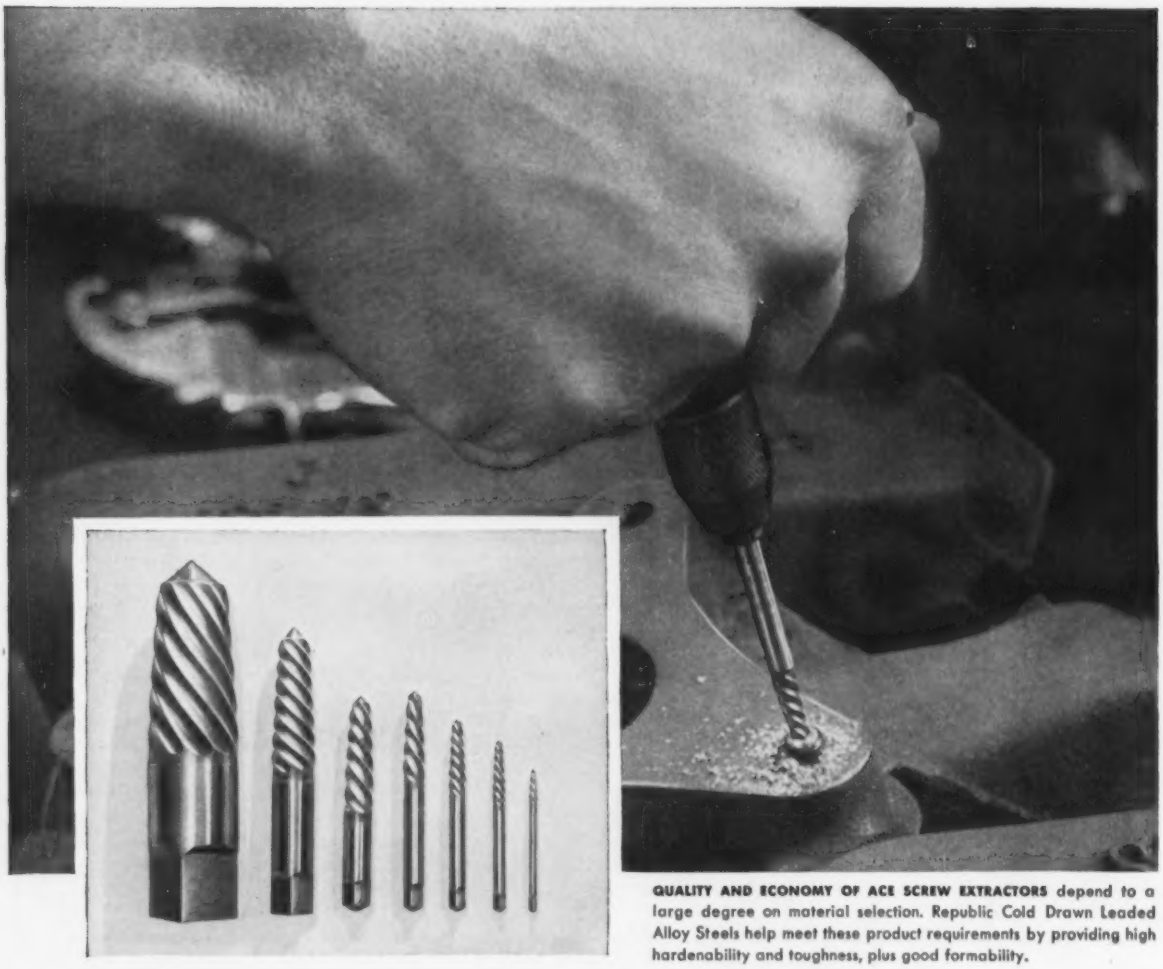
3. Gear sales efforts to market potential

4. Increase sales efficiency by preselling buying-specifying team

The **IRON AGE**

A Chilton Publication

Chestnut & 56th Sts., Philadelphia 39, Pa.



QUALITY AND ECONOMY OF ACE SCREW EXTRACTORS depend to a large degree on material selection. Republic Cold Drawn Leaded Alloy Steels help meet these product requirements by providing high hardenability and toughness, plus good formability.

REPUBLIC COLD DRAWN LEADED ALLOY STEEL IMPROVES PRODUCTION AND PERFORMANCE

of Ace Screw Extractors

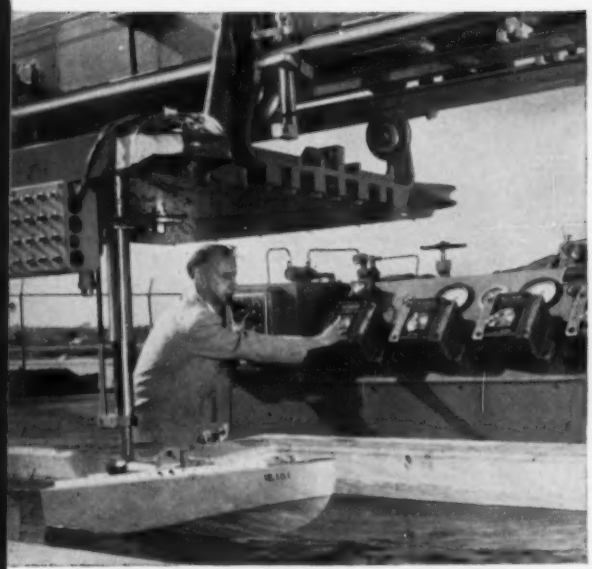
Use of Republic Cold Drawn Leaded Alloy Steel for Ace Screw Extractors helps the Henry L. Hanson Company, Worcester, Massachusetts, secure an ideal combination of production and performance advantages.

First, rolling of the extractor spirals used to require several passes, each followed by an annealing operation. Now, with Republic Leaded Alloy, separate passes can be made deeper. Result is a substantial reduction in the total number of steps. Moreover, since cold drawing improves the machinability of any given analysis, savings in machining costs are secured.

Next, in-service demands on Ace Screw Extractors require a high degree of hardness and toughness. The two Republic Alloys used (4140 and 4150) provide these properties with margins to spare. With scientific heat treatment, the finished extractors are practically unbreakable.

Republic Cold Finished Alloy Steels are available in every standard analysis, plus many specials, to give you the best combination of chemical and mechanical properties to suit virtually any application. Republic Metallurgists will be glad to work with you in developing still other types as required.

It will pay you to get complete information on all of the advantages offered by Republic Cold Finished Alloy Steels. Simply contact your nearest Republic office or mail coupon.



TOUGH PERFORMANCE SPECIFICATIONS make Republic Cold Finished ENDURO® Stainless Steel Bars ideal for this high-speed hull testing device. Hull models are suspended from a carriage which rolls on Republic Stainless Steel Bars. High tensile strength, close tolerance, and a fine surface finish provide smooth, precise operation of the testing device. Excellent service life is assured by ENDURO'S high resistance to corrosion, wear, and abrasion. Send coupon for further information on Cold Finished ENDURO Bars.

BRUTAL PUNISHMENT IMPOSED ON PULPSTONE STUDS during manufacturing and service is the reason why the Norton Company, Worcester, Massachusetts, specifies Republic Cold Drawn Steel Bars as basic material. Production requires a rugged combination of heavy roll-threading and machining. Completed studs are used to anchor abrasive segments to pulpstones. Pulp grinding operations impose very heavy loads on each stud. The excellent machinability, formability, and strength characteristics of Republic Cold Drawn Steel helps Norton meet all of these requirements with performance margins to spare. Moreover, finished stud cost is far less than previous minimums. Send coupon for facts.

INCREASED PRODUCTION, LOWER COSTS, IMPROVED QUALITY can be gained in parts produced from Republic Cold Drawn Special Sections. Because they are formed to the predominating cross-section of the part, special sections eliminate or greatly reduce required machining. Results are faster output and lower cost. Also, since cold drawing improves the physical properties of any given analysis, completed parts are stronger and longer wearing. Other advantages may include improved appearance and simplified design. For further information, mail coupon.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA-5913
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on these Republic Cold Finished Steel Bars:

☐ Alloys ☐ Leaded Alloys ☐ ENDURO Stainless Steel
☐ Carbon Steel ☐ Special Sections

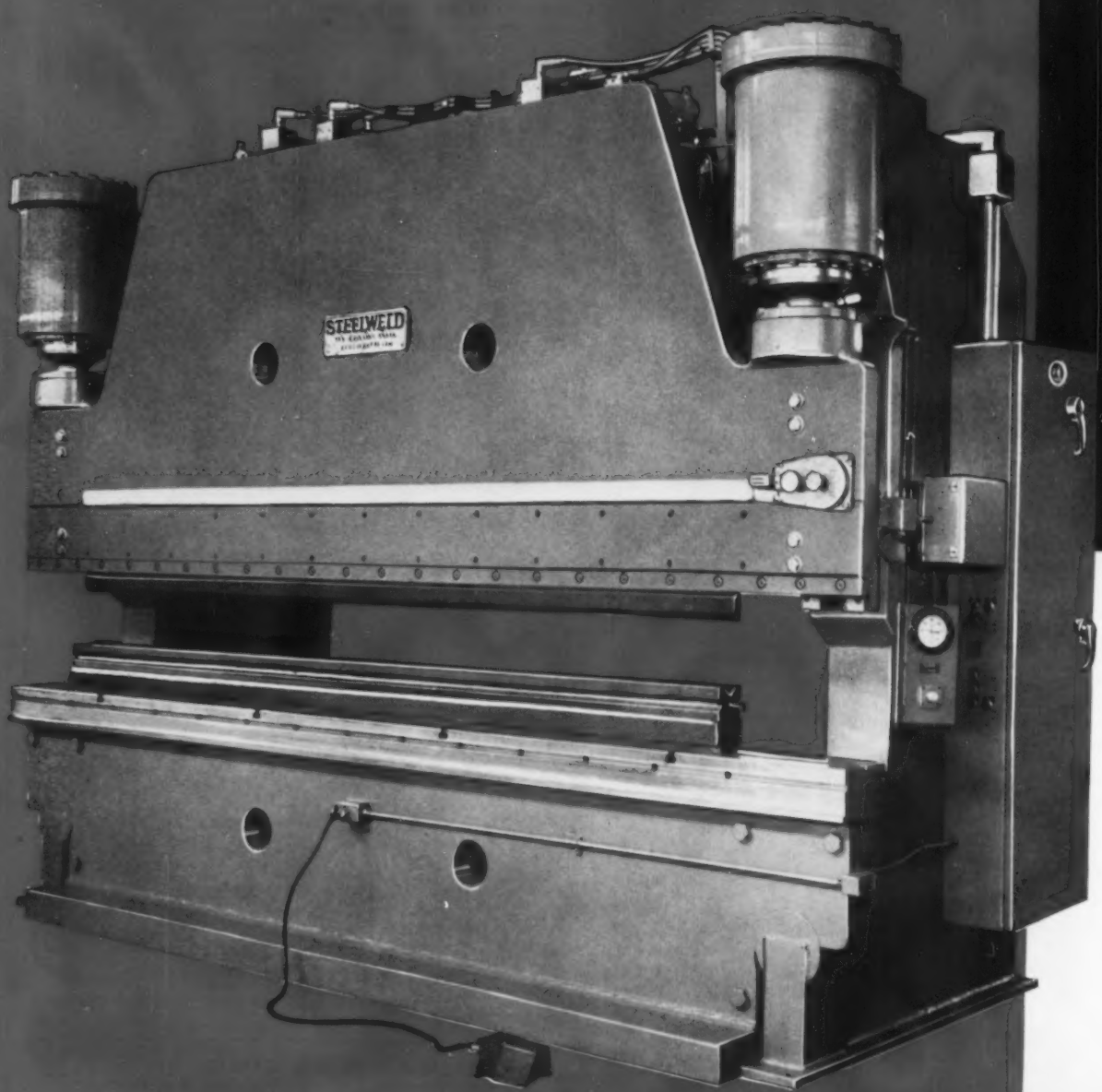
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Introducing a



Write today:

Ask for free copy of Catalog No. 2024A

NEW LINE of

STEELWELD HYDRAULIC PRESS BRAKES

Capacities to 2000 Tons

- **Positive overload protection.**
- **Constant power during entire stroke.**
- **Ram reversible at any point.**
- **Stroke quickly adjusted for any length.**
- **Fast ram approach and return—slow-speed pressing.**
- **Operating pressure simply adjusted.**
- **Accurate ram level automatically maintained.**
- **Ram easily tapered.**
- **Simple, safe to operate.**

CLEVELAND CRANE is proud to present its completely new series of Steelweld Hydraulic Press Brakes for bending mild steel from 10 gauge to 2 inches and in lengths to 30 feet.

Heavily built and of finest quality throughout, the machines are of the most advanced design with all features found desirable for ease of operation, maximum production and outstanding performance.

Steelweld hydraulically operated brakes are versatile machines capable of handling a wide variety of operations. They are ideal for jobbing shops, as well as for mass-production work. They work to close tolerances and have ample speed.

The new line of hydraulic brakes supplements the Steelweld line of mechanical press brakes, which Cleveland Crane has been building for more than 25 years, but does not supplant it. Each type of machine has its advantages and careful consideration must be given to the specific application to determine the type and size machine most suitable.

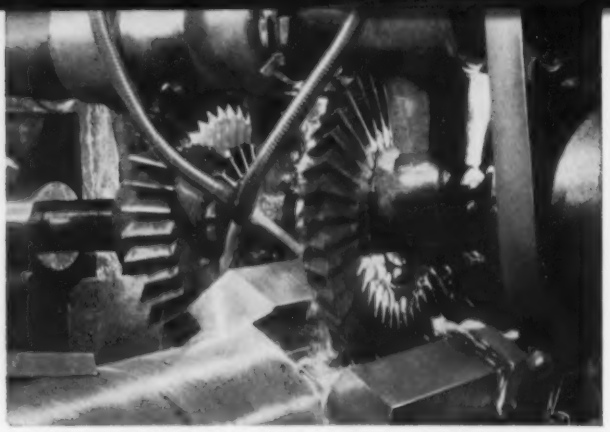
We urge you to get the facts on these new machines that have so much to offer you. Our sales engineers will be glad to give you the details. Or write for our new catalog below.

STEELWELD PRESSES

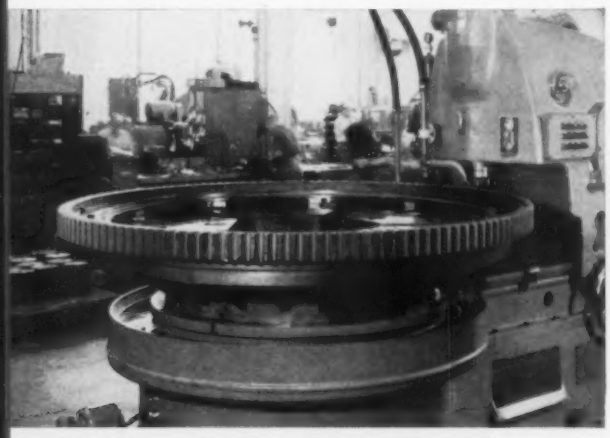
THE CLEVELAND CRANE & ENGINEERING CO.

4869 EAST 281 STREET, WICKLIFFE, OHIO

SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



MILLING TIME DOWN 71%—Hi-Qua-Led Steel open-die forgings enabled a machine tool builder to reduce time for straddle-mill dovetailing of pentagon shape by 71%. Overall time for piece, including milling, turning and trepanning, is cut 33%, and a significant saving in tools is also noted.

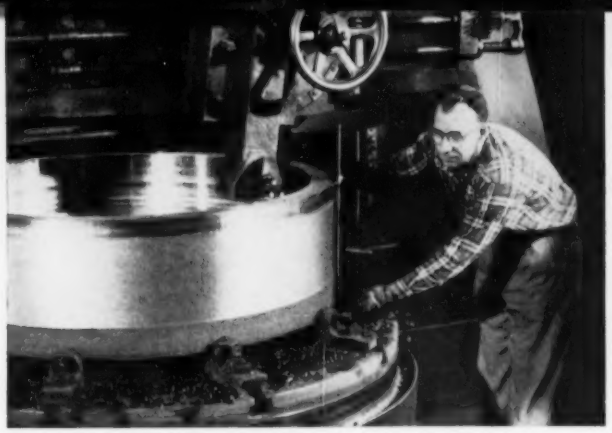


IMPROVED FINISH—A manufacturer reports a much smoother gear finish with ALCO Hi-Qua-Led Steel. There is a complete lack of burrs which formerly required extensive hand filing to remove. In addition, time for this cutting operation on a Fellows gear shaper is reduced 47%, and tool wear is down 20%.

700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.

EASY-MACHINING HI-QUA-LED STEEL* FORGINGS GIVE INDUSTRY NEW OPPORTUNITY FOR PROFIT

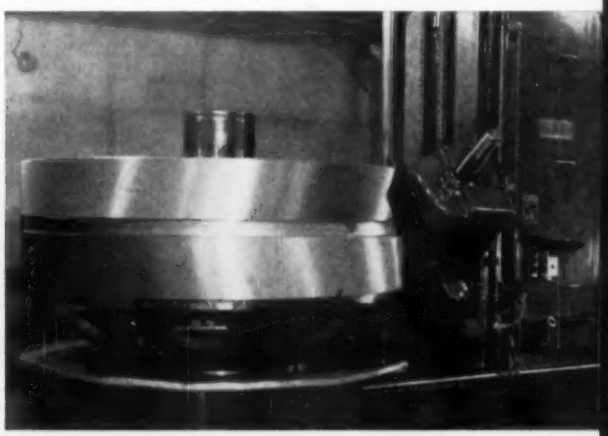
* **HI-QUA-LED STEEL**—ALCO's registered trademark for its new process leaded-steel forgings that are making outstanding reductions in tool wear, machining time and production costs.



TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.

8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.

FASTER SPEEDS, NORMAL TOOL WEAR—A gear manufacturer using a Fellows gear cutter was able to increase rough-cut speed 37% and finish-cut speed 111% with Hi-Qua-Led Steel. Smoother operation is noted, and the tremendous reduction in machine time is accomplished with only normal wear to cutter.



SAVES FULL WORK WEEK—Using gear blanks of ordinary steel, roughing and finishing on a Gould and Eberhardt machine previously required 65.1 hours. The improved machining qualities of Hi-Qua-Led Steel have speeded up gear production and the job is now completed in 24.9 hours, saving a 40-hour work week.

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records and boosting profit throughout industry. While maintaining all the physical characteristics of regular steel in any AISI grade, forgings of Hi-Qua-Led Steel, ALCO's special process leaded steel, provide the extra benefits of greatly reduced machine time, longer tool life and improved surface finish. In addition, the reduced friction component of Hi-Qua-Led Steel forgings assures much closer tolerances.

By switching to ALCO's Hi-Qua-Led Steel forgings in your operation, you can cut your machining costs drastically. Along with this reduction in costs, Hi-Qua-Led Steel forgings will provide the same service in your end product as you obtain with regular forgings.

ALCO specialists are available to show you—on your own machines, in your own plant—how Hi-Qua-Led Steel forgings will boost your profit. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide. Contact the ALCO sales office nearest you for complete details. For a booklet containing technical information on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 153, Schenectady 5, New York.

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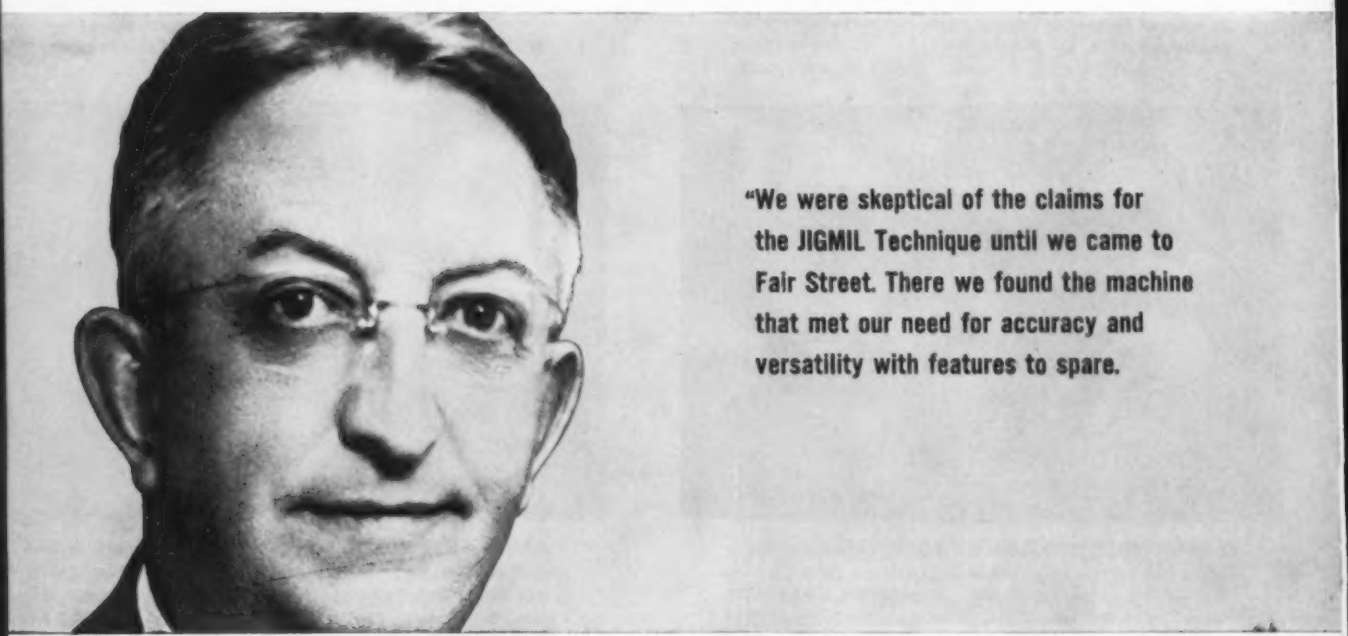
C. T. WEITZEL, President, Mechanical Specialties Co.
5700 West 96th Street, Los Angeles, California

a man who came to Fair Street



"We were skeptical of the claims for the JIGMIL Technique until we came to Fair Street. There we found the machine that met our need for accuracy and versatility with features to spare.

"As a contract manufacturer of tools, dies and precision components, we long felt the need for something new in the way of a precision boring and milling machine. Among other things, we wanted a machine having a configuration which would permit easy set-ups of a wide range of awkward and bulky work pieces. In 1946, we heard about the JIGMIL and the JIGMIL Technique of jigless boring. The claims for this machine were so unusual that we discounted much of what we heard, but decided that we should at least look into it. At Fair Street, we found the machine that met all our requirements with features to spare. Our first JIGMIL put us in a position to handle an entirely different class of work and without doubt, aided materially in our subsequent growth and development. Today, we have four JIGMILS which are consistently busy and consider them ideal job shop machines."

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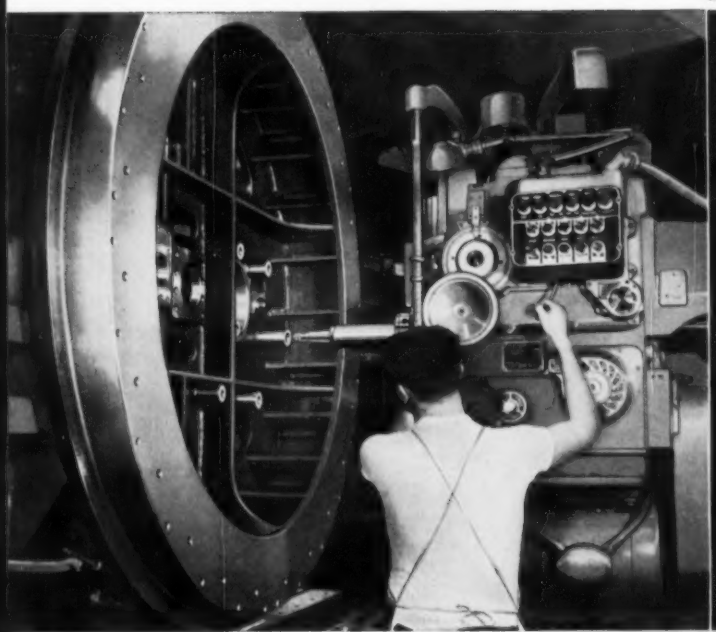

A FEW PROVEN ADVANTAGES OF THE JIGMIL TECHNIQUE

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- Makes possible greater flexibility of product design.
- Improves end product by permitting interchangeable assembly of parts without hand fitting.
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Mechanical Specialties Co. uses the JIGMIL Technique for machining pieces such as this 3500 lb. traversing-launching ring for guided missiles. Part is set-up on a Model 3B-96 JIGMIL. Critical machining involves boring 24 indexing holes on a 60" dia. with hole spacing of ± .0005; an interior hole pattern of 5 holes coordinated to a master within ± .00025; 30 additional holes in a 30" x 36" rectangular pattern to ± .001; accurate milling of locating pads and boring of 3 large critical bores to ± .001.

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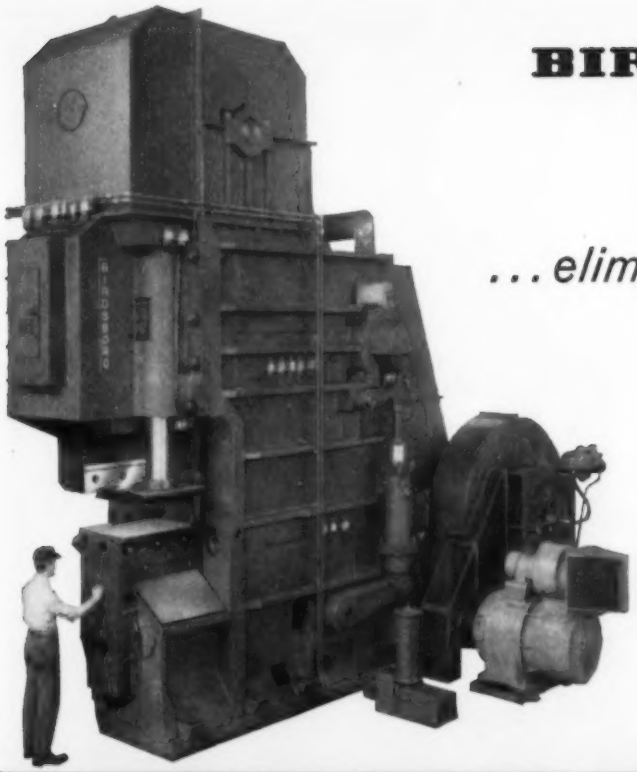
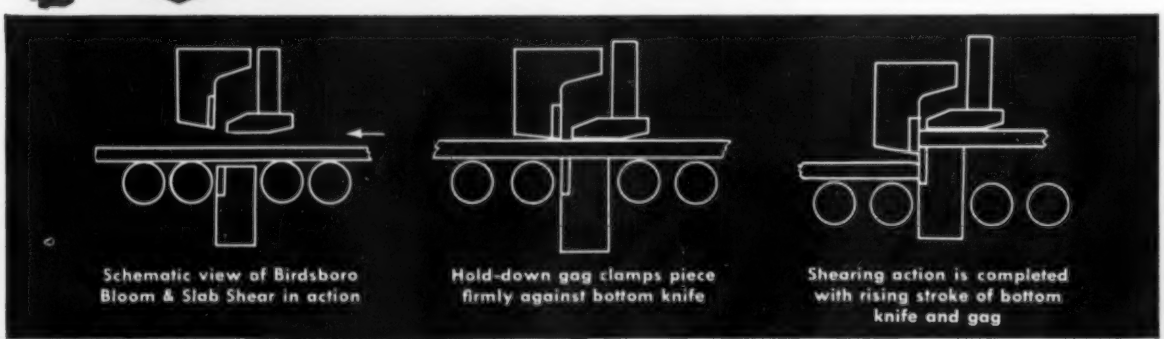


BIRDSBORO *1000-ton bloom and slab shear assures hook-free ends ... eliminates depressing tables*

• This shear, largest of its type in the country, cuts hot steel blooms up to 16″ square, and slabs up to 6½″ x 42″. The shear is a rapid cycle machine that completes one cut in 4½ seconds.

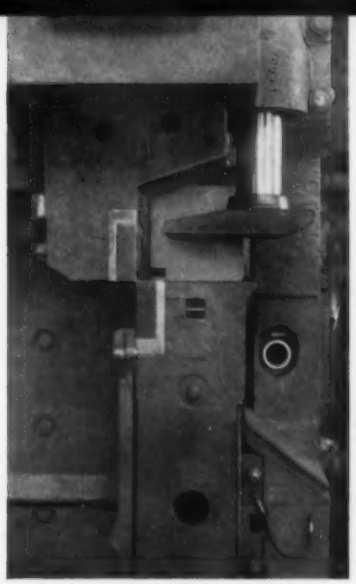
Actual cutting is done by the RISING action of the *bottom* knife. This eliminates the need for depressing tables or related equipment. A special hold-down device is linked to the bottom knife during the cutting stroke. The resulting clamping action holds the work firmly and gives square-cut ends free from hook.



Schematic view of Birdsboro Bloom & Slab Shear in action

Hold-down gag clamps piece firmly against bottom knife

Shearing action is completed with rising stroke of bottom knife and gag



You can learn more about this job-proven shear and other recent Birdsboro developments from your nearest representative or: *Main Office, Engineering Department and Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

MM 69-58

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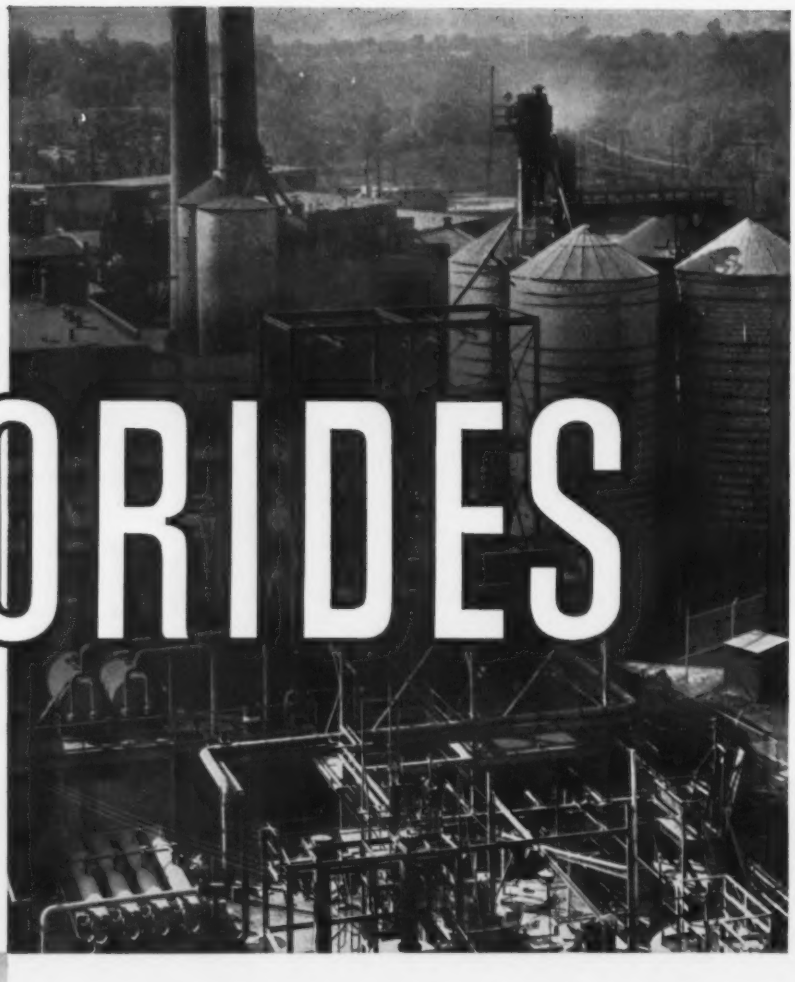

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Youngstown cold-rolled sheets

Quieting today's 300-horsepower automobile engines to a barely audible whisper, are efficient mufflers made by Mackenzie Muffler Company of Youngstown, Ohio, that provide long-lasting service while undergoing the severest of climatic and operating conditions.

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Another fine product gains NEW S.A. By Switching to the Saginaw Screw*

FRANK S. BUCKINGHAM
Chief Engineer, Static Testing Machines, Baldwin-Lima-Hamilton Corp., reports: "Using a Saginaw Screw on this tester reduced required horsepower from 15 to 5."

WORLD'S MOST EFFICIENT ACTUATOR OPERATES 75-TON BALDWIN TESTER WITH 5 H.P. INSTEAD OF 15

When you can cut power requirements 66% you give your product a lot more ***S**ales **A**ppeal—and that's just what Baldwin-Lima-Hamilton has done by switching from an acme thread to a pre-loaded Saginaw b/b Screw. What's more, it speeds up cycling and ends fretting corrosion, too.

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with over 90% efficiency is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give *your* products that vital new **S**ales **A**ppeal you're looking for right now. To find out, write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*

**Give your products NEW SALES APPEAL... switch to the* Saginaw ball bearing Screw

Anneal Stainless Welds

Some assume it's unnecessary to anneal after welding low carbon grades of stainless pipe and tubing. But for any corrosive use, one authority points out, unannealed tubing is subject to (1) severe pitting due to formation of delta ferrite in the dendritic grain boundaries of weld area and (2) stress-corrosion cracking on tube surface due to cold working. Proper solution heat treatment will insure anti-corrosive properties.

Balls Ease Tube Fouling

A simple method for cleaning condenser tubes continuously consists of circulating foam-rubber balls with the cooling water through the condenser tubes. The gentle wiping action carries out loose deposit before it adheres to tube surface. The balls need be circulated only a few hours a day to prevent deposits from forming. A trap in the system allows them to be collected when not in use. The whole cleansing process takes place without interruption of main plant operation.

August Pickup to Be Sharp?

The August pickup could be sharper than many expect. At least one big company has alerted buyers to the desirability of delaying orders until after Aug. 1. That's the date that the 3-pct excise tax on transportation goes off.

Trucking Rates to Go up

Look for trucking rates to go up about 4 pct in the next six months. Motor carriers are docketing new rates. Despite highly competitive conditions they are expected to put through increases late this year or early next.

Slim Chance for Mineral Aid

Prospects for passage of the mineral stabilization bill this year are slim, some members of the House Interior Committee say. The main reason: Opposition from some committee members. In the short time remaining this session it will be tough to swing opposition into line. But they also admit that if the blocks can be removed, the measure to aid producers of lead, zinc, copper and other metals could go through in short order.

Study Hot Blast Cupola

Intensive development and testing of the hot blast cupola is still going forward. It's slated for serious consideration in several future expansion plans. Now being talked about is a combination hot blast cupola and oxygen converter shop. Advantage would be utilization of low-cost scrap.

Want Higher Strength Steel

Rocket designers working on solid propellants are searching for a higher strength steel for the propellant casing. Specifications call for 240,000 to 270,000 psi yield strength with about 5 pct elongation at room temperature. Present limit on stainless or hot work die steels is about 220,000 psi.

Atom for Industrial Growth

Atomic fuels are to trigger industrial growth in high-cost power areas. New England, Florida, upper Midwest are to benefit greatly from nuclear energy. Upswing in these areas is to come about 1980. Cost of atomic power first must be lowered. After 1970, it should cost around 8 mills per kw-hr. Then it will be competitive with conventional power.

Surface Effect on Titanium

While tests on titanium parts for military vehicles, including tanks, show they can stand up to rough use, failures result from outer surface contamination, such as occurs in forging. Remedy is to remove this case by machining entire surface.

Clevelands power huge USS heat treat furnace

Handling plates as big as 45 ft. long, 13 ft. wide and 2 in. thick, the approach and delivery tables on this new Drever heat treat furnace require dependable power transmission. That's why Cleveland Worm Gear speed reducers were selected for this job in U. S. Steel's 160-inch plate mill.

Behind that dependability stands Cleveland's 46 years of design engineering coupled with workmanship of the highest quality.

In steel mills, mines, fabricators . . . anywhere rugged, compact and dependable speed reducers are needed, you'll find Clevelands handling the toughest assignments. To see how Clevelands can handle your most demanding power transmission jobs, ask for Bulletin 145. Write The Cleveland Worm & Gear Company, 3282 East 80th Street, Cleveland 4, Ohio.

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Right-to-Work Gains Momentum Through State Referendums

Right-to-work laws may be on the ballot in six states this year. Eighteen already have adopted anti-union-shop laws.

Goal is two-thirds of all states. This could spark a movement toward constitutional amendment.—By R. D. Raddant.

▪ Labor is running scared on right-to-work laws. These controversial measures to ban the union shop are making headway across the country on a state-by-state basis.

Once considered primarily an issue to be fought out in Taft-Hartley Act amendment, right-to-work is now a state issue.

Opposition Organizes—Concern over the national progress of right-to-work laws is reflected in the recent organization of the National Council for Industrial Peace, by Mrs. Eleanor Roosevelt and former Sen. Herbert H. Lehman. With a high-powered organization and publicity staff, its purpose is to buck right-to-work progress.

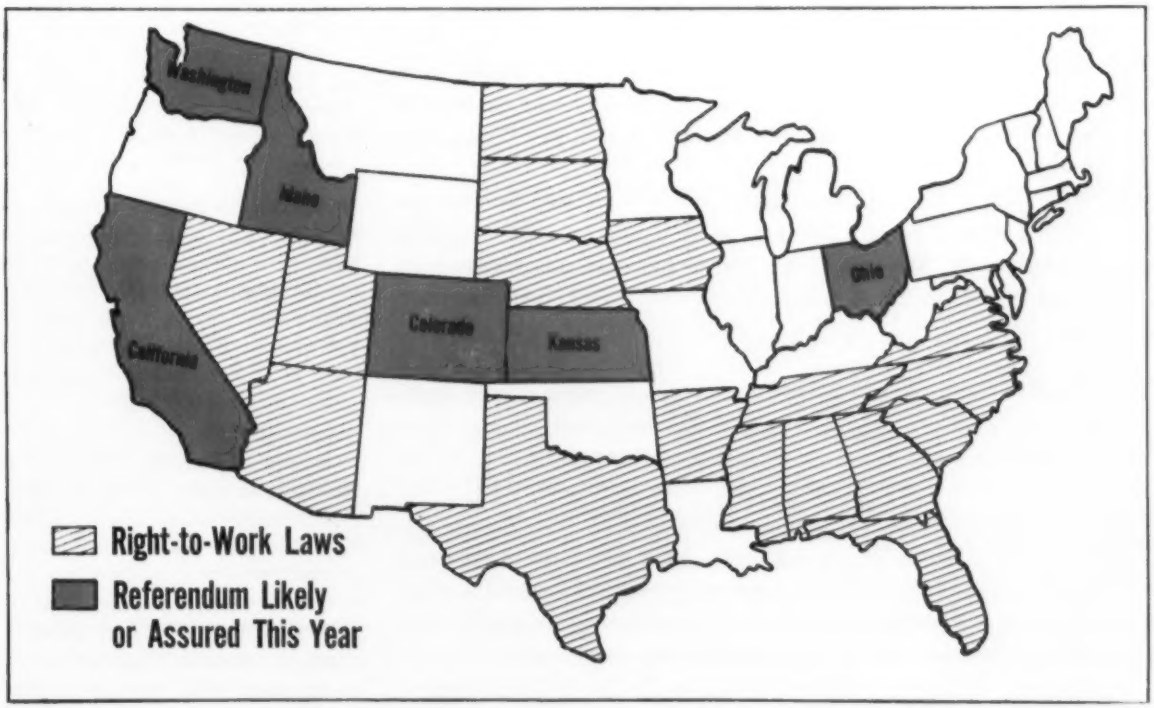
Immediate cause of the sudden effort is the realization by unions that right-to-work will be a big issue in several major states this fall. Effort of the Council will be directed to defeating these referendums.

Key States—In California, Washington and Kansas, the issue is definitely on the ballot. Petitions have been filed in Colorado and Idaho, but they are still in the process of checking.

But the key state probably is industrial Ohio. Aug. 5 is the deadline for filing petitions there, but a sufficient number of signers is assured.

Northern Invasion — If Ohio should follow neighboring Indiana into the right-to-work column, union leadership would be thoroughly

How Right-to-Work Laws Spread



shaken. Previously, Indiana's adoption of a right-to-work law by the state legislature was considered "one of those things." Other industrial states were considered safe, from the union point of view.

But the climate has changed in the past year or so, and a national right-to-work movement is a definite possibility. Unions are concerned, and, at the same time, right-to-work advocates are beginning to reflect more confidence.

Section 14(b)—In review, so-called right-to-work laws grew out of the Taft-Hartley labor relations act. This act outlawed the closed shop, but permitted negotiation of union shop contracts. It also specifically permits, in the controversial Section 14 (b), individual states to enact laws prohibiting the union shop.

Although the name "right-to-work" has been widely challenged as misrepresenting the issue, it is probably now universally recognized as meaning the right to work in a specific plant without joining the union, even if the union is the recognized bargaining agent.

Name Backfires—In fact, the current recession has caused the name "right-to-work" to backfire. In some of the current elections that designation has been dropped entirely. Union people themselves only occasionally mumble about the designation.

The right-to-work movement originated in the South, with much of the early impetus gained in the railroad industry. State campaigns are handled by state committees, but national effort is centered in the National Right-to-Work Committee in Washington, D. C.

Hartley Active—Fred Hartley, co-author of the Taft-Hartley act, for a time was paid president of the organization. W. T. Harrison, executive secretary, is now the only paid member of the board of directors. An old railroader and long-time opponent of the union shop, he has been a leader in right-to-work legislation from the beginning.

The National Committee functions as a combination educational, advisory, or public relations organization. It frequently assists in formation of state groups, but state committees do their own organization and financing.

One Objective — The National Right-to-Work Committee, says Mr. Harrison, has "one objective—to oppose compulsory union membership."

Originally, union leadership gave only casual interest in state right-to-work laws, concentrated on wiping out the issue at the state level by amendments of the Taft-Hartley act to eliminate Section 14 (b). After all, states with right-to-work laws were not industrial, and had little overall import on national labor relations.

Amendment Possible — But now 18 states are in the right-to-work fold, with six more probably voting on the proposition. This is getting close to half of the states. And, if you review your constitutional history, an amendment to the Constitution requires affirmative vote of two-thirds of the states.

Having a right-to-work law on the books of two-thirds of the states would create tremendous psychological pressure for a constitutional amendment.

"Although we have stayed away from Congress, if we ever got two-thirds of the states, then we would go up on the Hill," says Mr. Harri-

Right-to-Work at a Glance

The Issue—**The goal of right-to-work laws is elimination of the union shop. Union shop, when negotiated by plant and union, requires that every worker become a union member as a condition of job holding.**

The Law—**Taft-Hartley, while specifically legalizing the union shop, gives the individual states the right to prohibit the union shop in state legislation. This is embodied in the controversial Sec. 14 (b).**

Progress—**Eighteen states, most of them in the South, already have right-to-work laws. It will probably appear on the ballot this year in six states. Key states are industrial Ohio, California, and Washington.**

Union Viewpoint—**Unions oppose right-to-work laws for two primary reasons: First as a threat to union security, second because it encourages the "free loader" who doesn't pay dues, but benefits from union negotiation. Most union officials fear it as a "union-busting" measure.**

Right-to-Work Viewpoint—**Most people affiliated with right-to-work campaigns insist there is only one issue, opposition to compulsory unionism.**

The Outlook—**With little chance of action on the Taft-Hartley act, right-to-work has become a state issue. But if two-thirds of the states should adopt similar measures, pressure would build up for a Constitutional amendment. Opponents are now stepping up activity at a national level and future state victories may come harder.**

son. "Our eventual long-range plans are for a constitutional amendment."

Unions Defensive—For a change, unions are on the defensive in statewide referendums. They admit they have a problem of getting their position over to people like farmers and housewives, who have no personal interest in labor questions.

It's also apparent that this is a bad year for organized labor. The Congressional hearings have put unions in a bad light, and put labor on the defensive.

Back to Ohio—Of major concern is the industrial state of Ohio. Dating back to the days of the late Sen. Robert Taft, industrial Ohio has a record of not going down the line for organized labor.

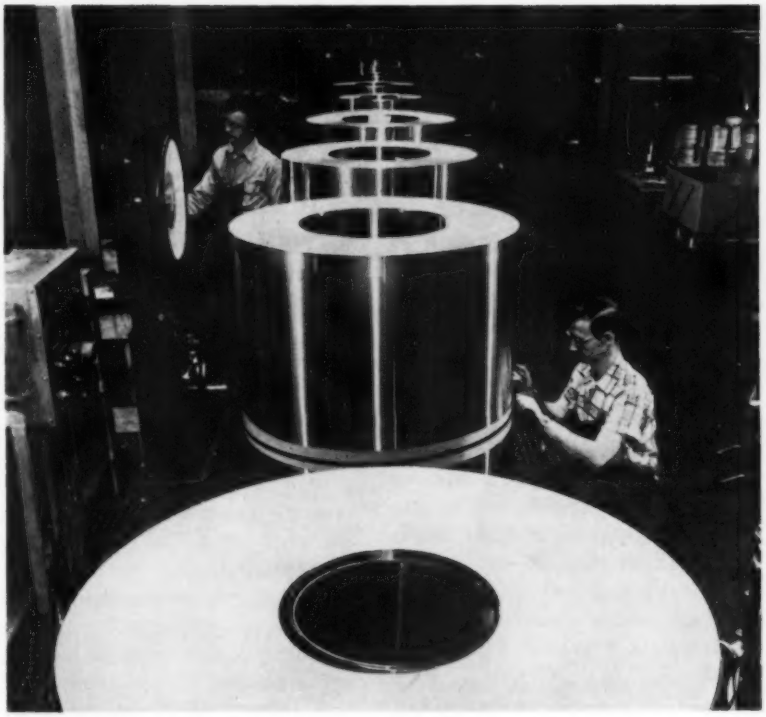
Generally, right-to-work movements get their principal industrial support from family-owned, or owner-managed companies, little from the major industries.

Coast States—However, the personal action of William Allen, head of Boeing Aircraft, is considered responsible for getting the State of Washington referendum on the ballot.

In California, Sen. William Knowland has made right-to-work an issue of his campaign for governor. This was believed to hurt his campaign in the primary, but the issue could go either way.

Others Interested—The Chamber of Commerce of one of the large industrial states recently polled member companies seeking their opinions on right-to-work legislation. Over 92 pct favored such a law, and the organization is now considering whether to launch a right-to-work movement.

Not all industry, nor all industrialists, are behind the right-to-work movement. Many, particularly in the larger industries, have found the union shop no more difficult to deal with than an open shop. Opinion here is that a union shop cuts down dissension in the plant, and encourages union participation.



ECONOMY: A new conveyor system at Kaiser's Ravenswood plant moves coils through inspection and packaging faster, and at big savings.

New Coil Conveyor Saves Money

▪ A new aluminum coil inspection and packaging conveyor system is paying off to the tune of $18 per operating hour for Kaiser Aluminum & Chemical Corp., at its Ravenswood, W. Va., plant.

And it is giving the customer a service plus in individual coil weights.

Design — The secret is in the design. It is set up to eliminate five delay points, cut distance the coils travel by as much as 655 ft, reduce space needed by more than 3600 sq ft, and eliminate the use of at least one overhead crane and two power trucks.

The inspection conveyor will move a maximum of 110,000 lb of 10,000 lb coils at variable speeds to 40 fpm. It can be indexed to stop automatically every 54 or 72 in.

A hydraulic lift elevates coils only one inch to place them on the scales.

Safety—Kaiser says the system is also safer. All catch points are eliminated. A bell warns workers of every move the conveyor makes. And cranes and power trucks do not operate within 15 ft of the inspection and packaging crews.

The conveyor line was designed jointly by Kaiser Aluminum & Chemical Corp., and Kaiser Engineers; and fabricated by Standard Conveyor Co., St. Paul, Minn.

Mid-East Blowup a Market Alert

It's Time for a Thorough Reappraisal

Better take a second look at your inventories just in case.

This is no time for stock cutting. Alertness could pay dividends.—By Tom Campbell.

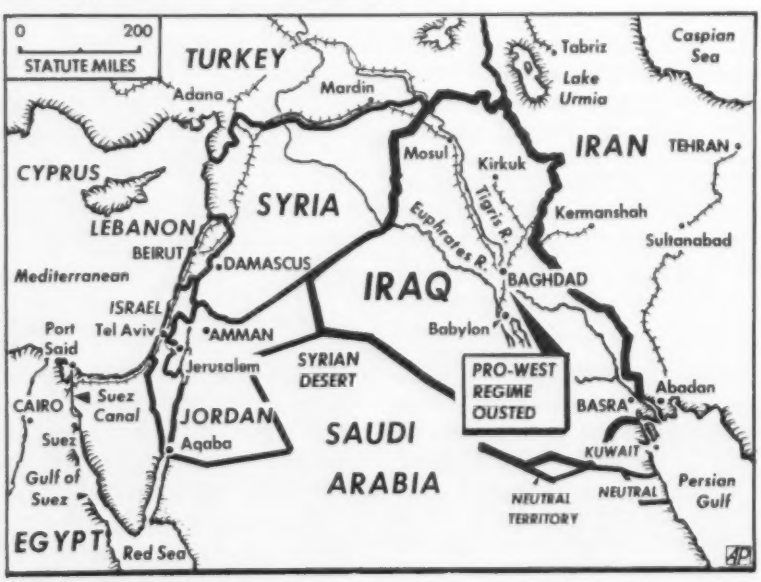
▪ It is slowly dawning on many metalproducers and users that we may be in for trouble in the near future. This feeling of being caught up in the vortex of international upheaval is expected to quicken the buying of steel, aluminum, copper, and certain machines and equipment.

The oil industry is alerted and will probably reverse its slow buying policies in steel and other metals and materials. There is also belief that defense spending will gain speed. The argument here is that no chances can be taken. So the armed services are expected to put on the pressure for contracts that are already placed—but not completed.

Steel Price Dilemma—The steel firms who wanted steel prices raised on July 1 are in a sour mood. To do so now—and it is expected that U. S. Steel will raise its prices in August by at least $5.50 a ton—would cause some eyebrow raising among "political patriots." But if the price increase was needed before the current war-like atmosphere developed, it is needed just as much now that we are in a period where war can break out—and controls slapped on.

There is some stirring among steel users this week which is anything but nonchalant. Even before landings at Lebanon and Jordan there was a definite pickup in steel buying which was spreading to almost all items.

All Eyes on the Middle East



TROUBLE: The Mid-East blowup will prompt reappraisals of many business plans. Inventories, particularly, will get a very close scrutiny.

Alert For Steel Users—The fact that some large steel firms did not confirm this did not mean that it was not an important market factor: Perhaps their sales staffs were not as active eager beavers as were some other steel company salesmen. But the pitch this week is that the improvement has been bettered from a week ago in tone, tonnage, and forward buying plans.

There is no major splurge in steel buying yet. But there is reason to believe that smart steel users are going over their steel stocks with an eagle eye. With money cheaper at present, some steel users will be more liable to lay up a larger supply of steel in the last six months "just in case." The very thought of war or limited skirmishes makes seasoned purchasing agents take a second look at inventories.

No Time to Cut Stocks—So far The IRON AGE has uncovered no hysteria in the metal markets nor has there been any evidence of rash buying. But it has uncovered a frame of mind among buyers and sellers of metals that this is no time to keep cutting stocks or overlooking a bargain—in price and delivery.

In the case of machines and equipment even the most hardbitten cynic is ready to agree that the quiet and secret bargains will soon be out of the picture if they are not already out. There may be some last minute pressure to get in under the wire but with the Middle East tinder as dry as the Sahara the so-called bargains in machines and equipment may not be long for this market.

Ike on Controls—Coming on top of a genuine recovery—The IRON AGE predicted some time ago that the bottom in steel was reached in

What to Expect in Washington

Trouble in Lebanon, if confined to a simple police action, won't bring on new Federal controls. Price controls and commodity controls won't be needed.

But some stiffening of prices can be expected, Washington warns. This is particularly true of all metal products and goods.

Here are the important new government trends now in the making as a result of the military action in Lebanon:

Defense Spending—A step-up is due. Procurement of the kinds of weapons and supplies needed to fight a "conventional war" will rise.

The Business Recession—It will fade faster. Buying, both by industry and consumers, will gain. Fear of higher prices will tend to touch off some inflation. Depleted inventories will cause increased factory output, with bigger payrolls, more employment.

Tax Cuts—Never a bright prospect, it's a dead issue. In fact, Treasury and congressional leaders are conferring privately over the possibility of higher taxes next year.

Lower Tariffs — More foreign trade is in prospect. Chances for enactment of the reciprocal trade bill are greatly enhanced.

Foreign Aid—This will increase. Tentative cuts made by Congress probably will be rescinded. In the end, the Administration will get all —or nearly all—of the $4 billion it wants.

April-May period—the warlike tension caused by the Middle East decision of our government has many in the trade assuming that controls are coming at the first sign of major shooting—other than it being accidental.

While Ike is against controls, he can and probably would swing his weight behind wage and price controls if the presence of American and British troops in the Middle East results in a "limited" war. The situation will be explosive as long as our troops and England's are located in Lebanon and Jordan.

Time to Buy?—The time table for procurement and quickening of purchasing all along the line will be for the wise fellows to get going first. Later when the word seeps around the not-so-fast fellows will climb on the band wagon. If our troubles are still multiplying, the mass of buyers and users will reverse their precautionary buying habits of the past year and a half.

So far most Americans—including industrialists—have not yet fathomed the seriousness of our international position now that we have made the fateful step of moving troops to the Middle East and stationing them in an area which has been a center of turmoil for 4000 years.

Critical Period Ahead—The next 30 days will tell the story in the metal field. The advance of copper prices by the last holdout, the step up in steel orders, and the certainty that bargain basement sales in machines and equipment will soon be at an end paves the way for perhaps a swift upward trend in business—instead of the tortuous and slow uptrend predicted by some. But a speedy upturn accompanied by runaway prices could—and probably would—bring swift controls by an Administration which abhors such a move.

Salaries Up 4.8 Pct.

The salary of the average American middle management executive is up 4.8 pct from last year. He is now making $11,800 says the American Management Assn., compared to $11,240 in 1957.

Canadian middle management men fared somewhat better. They boosted their pay an average of 5.2 pct.

Bonuses were paid to 37 pct of the Americans questioned by AMA, as compared to 45 pct the year before.

Top rates tend to be higher in bigger companies, according to the survey. Middle management salaries in small companies range between $6000 and $15,000 while in large companies they may hit $30,000.

Car Sales Grow

Auto sales have jumped in June. Chevrolet calls June its best of the year—128,748 passenger cars and 28,419 trucks. A spokesman says dealers delivered 47,919 passenger cars and 11,733 trucks in the last 10 days of June alone.

Rambler says its June sales topped the biggest month in 1957, with dealers delivering 14,876 cars compared with 12,810 for the year ago month. AMC says sales of Ramblers since its fiscal year began Oct. 1 total 112,832, up 66.8 pct from over the same period of the preceding fiscal year.

Chrysler notes second quarter sales gain over first quarter is "encouraging." Passenger car sales were up "more than 5 pct and trucks showed an 8.8 pct increase."

New Transformer Plant

Westinghouse Electric Corp. will build a multi-million dollar power transformer plant in Muncie, Ind.

No date has been set for start of the construction. But plans call for the work to be done in time for production to begin late in 1961 or early 1962.

Reds Push Machine Tool Export

Soviet Satellites Drive for Bigger Market

Machine tools from Poland, East Germany, and Czechoslovakia are a growing threat in the world market.

Eastern bloc countries produce good equipment for sale at low prices, British expert says. —By G. F. Sullivan.

■ Poland has doubled its machine tool output during the last five years; both East Germany and Czechoslovakia have well-established industries producing good machine tools and selling them at low prices in world markets. Even if you exclude Russia for the moment, the political and economic threat of the satellite nations in this field is a very real and growing force.

For these and other opinions on the machine tool industries of the communist-bloc countries, The IRON AGE sought out Guy Chesham of the British Machine Tool Trades Assn., London. Mr. Chesham, who specializes in export problems, recently returned from a visit to Poland, where the fast-growing Polish machine tool industry was on exhibit at the Poznan fair. He also visits other East-bloc nations to keep tabs on their progress.

Poles Make Progress—He inspected three machine tool plants in Poland last month, reports that they are coming along rapidly. The Poles say one reason is the embargo—they had no choice but to build up their own industry.

He told The IRON AGE that all the countries of the Eastern bloc are exhibiting at scores of industrial exhibitions, not only in the Soviet bloc, but in the free world, including the Middle East and South America. While East Germany and Czechoslovakia have the most advanced industries, he also saw exhibits of Bulgarian, Hungarian, and Chinese machines. Some of the latter are shown for propaganda only, are of fairly simple design. They are not yet an export threat.

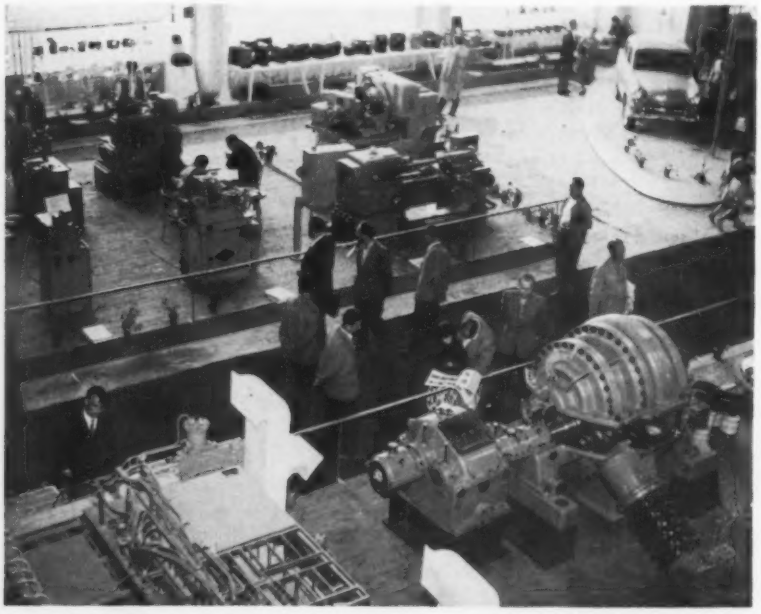
Embargo Boomerang — Before Germany was divided, the Berlin Leipzig area had a heavy concentration of machine tool builders. While some escaped to Western Germany, nevertheless many plants are now running full blast in Eastern (Communist) Germany.

British manufacturers have bought a number of Czech machines. The paradox—as far as the embargo is concerned—is this: Some of the large Czech machines now being used in Britain have specifications which would not permit any Western builder to ship them into Czechoslovakia! But Czechs export them at prices too low for the British to compete. (And if the British can't compete on price, the U. S. would obviously be even further out of line).

The Big Push—Czechoslovakia was a German arsenal in World War II. Prior to 1953 Russia absorbed all Czech machine tool production. As the Soviets expanded their own production they dropped down to taking only 5 or 6 pct of Czech output.

As a result, Czechoslovakia has now pushed into world markets in a very aggressive way. In 1956 the Czechs increased their exports to highly industrialized countries over their 1955 exports by 44 pct, while U. S. builders increased theirs by 1 pct. During the same period their exports to underdeveloped countries went up by 50 pct, against a U. S. increase of 12 pct.

It'll Get Worse—They are now exporting to 90 countries, at higher



POZNAN FAIR: Soviet exhibit at the Poznan Fair indicates resurgence of East-bloc machine tool industry. Red satellite exports are rising.

than the pre-war rate. They make over 400 types of machine tools, of which some 250 are exported.

"The satellite countries are exporting like mad," said Mr. Chesham. "When Russia itself gets into the swing, this thing is going to be very critical."

Old Soldier Dies

Add one, subtract one is the formula which will be used by Studebaker-Packard Corp. to come up with a net gain in sales in 1959.

The smallest of the automakers will introduce a small car line this fall. At the same time it is expected to erase the name of Packard from its product line.

The new small car will be all car with little overhang. Wheelbase is said to be about 108.5 in., just a touch over the 108 in. wheelbase of American Motors' Rambler and considerably longer than AMC's American with its 100 in. wheelbase. At the same time, its overall length will be about 175 in. This is less than the 178 in. American.

Comparatively long wheelbase to length ratio will enable S-P to offer nearly as much interior room as in present Scotsman and Champion models, which have a wheelbase of 116.5 in., but in a smaller package.

The death knoll for Packard was tolled nearly a year ago. In answer to a question from The IRON AGE, a S-P executive confided: "I think the switch to a Studebaker body (for the Packard) is a graceful way to let it die."

Aluminum from Massina

Aluminum Co. of America will start making metal in two new potlines at its Massina, N. Y., plant this fall. The lines will have an annual capacity of 108 million lb.

Two idle potlines with total of 72 million lb capacity will also be reactivated at that time. The move will be made when power from the New York State Power Authority's St. Lawrence project becomes available.

U. S. Tool Storage Costs Mount

About 5,000 machine tools are expected to be retired each year for the next three years.

Costs of warehousing excess tools are growing. $3.5 million is asked for this year.

▪ Congress is asked to vote another $3.5 million to pay for the warehousing of government-owned machine tools in the next 12 months.

This request from General Services Administration doesn't sit well with congressional leaders. Suspicion is spreading that public funds are being used to store and inspect thousands of tools which could have been disposed of years ago.

Cost Builds Up — At the latest count, the National Industrial Equipment Reserve operated by GSA contained 4,741 items. Cumulative total of items brought in is 39,436, of which 26,457 have been disposed of. The other 8,238 were transferred to the military.

Over the past ten years, the reserve program has cost close to $4.8 million. GSA originally asked Congress for $503,600 to cover the costs in the year that began July 1. Now the agency bids for another $3.5 million, raising its request for the year to $4 million.

GSA expects to receive into the reserve 5,000 tool items per year for the next three years. Those looked for in the current year are to be, generally, heavy metal processing tools. Mentioned specifically are metal-cutting lathes and multiple-spindle tools.

Where It Goes — Here are the uses for the additional $3.5 million, as planned by GSA in keeping with its expanded program:

1. Payment of higher transportation costs.

2. Opening of new processing areas and enlarging of existing ones.

3. Dehumidification of added warehouse space at the present Burlington, N. J., and Dixon, Ill., storage sites, and space at a new storage center. GSA plans to activate this one at Jeffersonville, Ind., to take care of the additional tools.

4. Buying of material-handling equipment for the present and new sites.

5. Wages for a greater number of workers to process and test the tools received. Processing includes analytical testing of the operating condition of the equipment and preparation for storage.

Cost Breakdown — Major items within the $3.5 million desired are $1.3 million for dehumidification, $620,000 for building repairs, $707,300 for transportation, $375,000 for handling equipment, and $277,800 for wages.

Of the storage space to be dehumidified, 500,000 sq ft will be at the proposed new center in Indiana. The remaining 388,610 sq ft are to be at the present sites.

Declared Excess — Equipment that necessitates an added storage site is to come out of military contractors' plants, GSA says. Termination of a military contract is the usual action that prompts a military service to review its further need for a specific tool. If there is no foreseeable mobilization need for the tool, the service will declare it excess.

A decision that some 12,000 tools are excess is expected this year and for each of the next two years. On the basis of past experience, the number of these tools which appear to be headed into the equipment reserve is 5,000 per year for the next three years.

Lower Freight Costs Are Coming

Excise Tax on Transport Dies in August

Shipping costs will fall about half a billion a year when excise tax on transportation is lifted next month.

But change only cancels out a selective freight hike put on rail shipments earlier this year.—By G. J. McManus.

▪ Industry's freight bill will drop by about one-half billion dollars a year starting Aug. 1, when the 3 pct excise tax on transportation goes off.

For one maker of electrical equipment, the tax removal will save $1.6 million a year. The freight bill of a major steel mill will drop by $2 to $3 million a year. A diversified company (coal, chemicals, construction) expects to save $300,000 a year.

No Big Slashes—Shippers appreciate these aggregate savings. They point out, however, that the tax cut does not mean spectacular cost slashes on individual units of production.

Freight for an average household appliance will drop by about 18¢ on a haul between Ohio and New York. For the average haul, steel scrap will travel for about 8¢ a ton less. Aluminum sheet will move for $2.66 a ton less on a typical haul to a customer from separated refining, smelting and rolling stages. In the case of aluminum the saving is less than 1 pct of the selling price.

Steel Mills Benefit—Steel mills stand to be among the big gainers from the tax cut. While the average industrial plant puts 5 pct of its sales dollar into freight, an integrated steel mill pays at least double this for transportation.

Without the excise tax a steel mill in Pittsburgh will save about 20¢ a ton on iron ore shipments; 6¢ a ton on limestone; 4¢ a ton on coal. On outgoing traffic, steel mills will realize savings to the degree they now absorb freight.

Truck Rates May Rise—However, lifting of the excise tax merely cancels out a selective 3 pct increase applied to rail shipments earlier this year. Iron ore, scrap, coal and semi-finished materials were hardest hit by the February hike. Scrap rates went up 40¢ a ton; coal rates 10¢ a ton; iron ore rates, 5-10 pct.

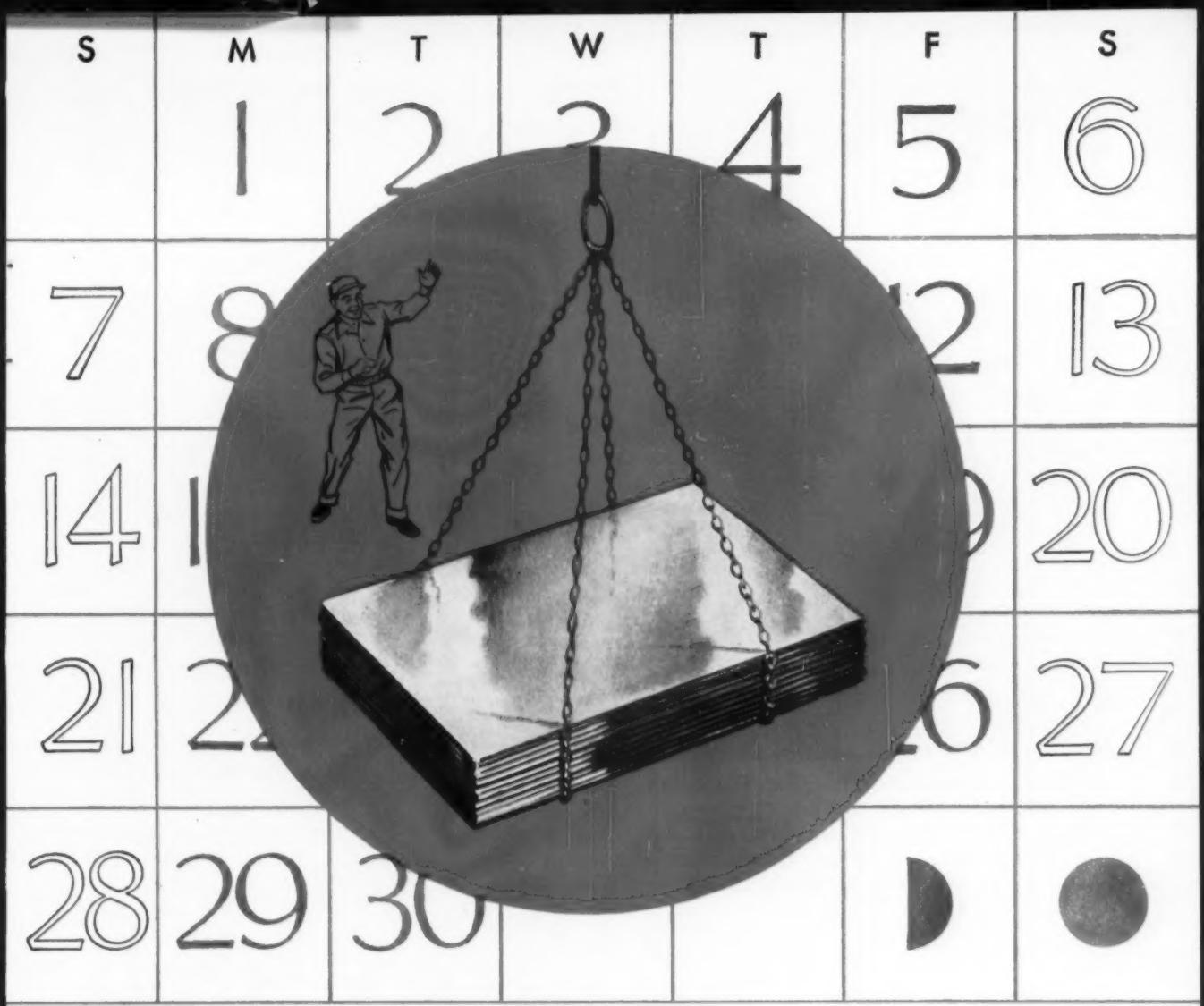
These increases came on top of the general 12-14 pct boost authorized last summer. Motor carriers were unable to get together for the final installment of last year's hike but are making preparations for it now. Traffic men look for truck rates to go up about 4 pct in the next six months.

For steel mills and their customers another rate addition may be coming. A recent report by the Interstate Commerce Commission recommended minimum trucking rates for steel product shipments in the eastern and central areas. Referring to "destructive" competition among truckers, ICC proposes a schedule that would mean higher truck rates generally and would bring definite boosts in charges on steel moving from the Pittsburgh axis eastward.

Effect on Prices—It's hard to say what effect removal of transportation excises will have. A large part of industry's freight bill is built into prices. One broadly based manufacturer estimates 95 pct of its products travel on a freight prepaid basis. Even where products are sold on a price f.o.b. producing point, shippers are picking up part of the freight bill.

How Tax End Will Cut Shipping Costs

	From	Reduction Per Ton
Iron ore	Mesabi to Pittsburgh	18¢
Coal		4¢
Scrap	Detroit to Pittsburgh	30¢
Limestone	West Va. to Pittsburgh	6¢
Steel sheet	Pittsburgh to Detroit	12¢
Alumina	Mobile, Ala. to Vancouver, BC	37¢
Aluminum pig	Vancouver to Davenport, Iowa	71¢
Aluminum sheet	Davenport to West Coast	$1.18
Household appliance	Columbus, O. to NYC	50¢
Electric apparatus	Pittsburgh to West Coast	$1.35
Electric motor	Dayton to Detroit	16¢



Ingersoll Steel Deliveries

TIMED TO YOUR PRODUCTION

Here at Ingersoll Steel we knock ourselves out to give you on-time, as-promised delivery of a wide variety of special purpose steel sheets and plates. The minute your order is received it starts getting the V.I.P. treatment—and that's the way it goes all the way to your receiving department.

Being a specialty mill, we can and do adjust our production schedules to dovetail with your production needs. And with our advantageous central location at New Castle, Indiana, prompt deliveries are assured. Next time you need any of the products listed below, call Ingersoll Steel and you'll see what we mean.

Ingersoll Produces:

STAINLESS STEELS • HEAT RESISTING STEELS • INGACLAD STAINLESS-CLAD SHEETS • ALLOY STEELS • FORGING QUALITY ELECTRIC STEEL INGOTS • AUTOMOTIVE CLUTCH PLATE STEELS TEM-CROSS CROSS-ROLLED STEEL • CARBON ELECTRIC STEEL FOR TRACTOR CLUTCH DISCS • KNIFE STEELS • SAW STEELS HIGH SPEED HACK SAW STEELS • SOFT CENTER AND OTHER AGRICULTURAL STEELS • SPECIAL ANALYSIS STEELS

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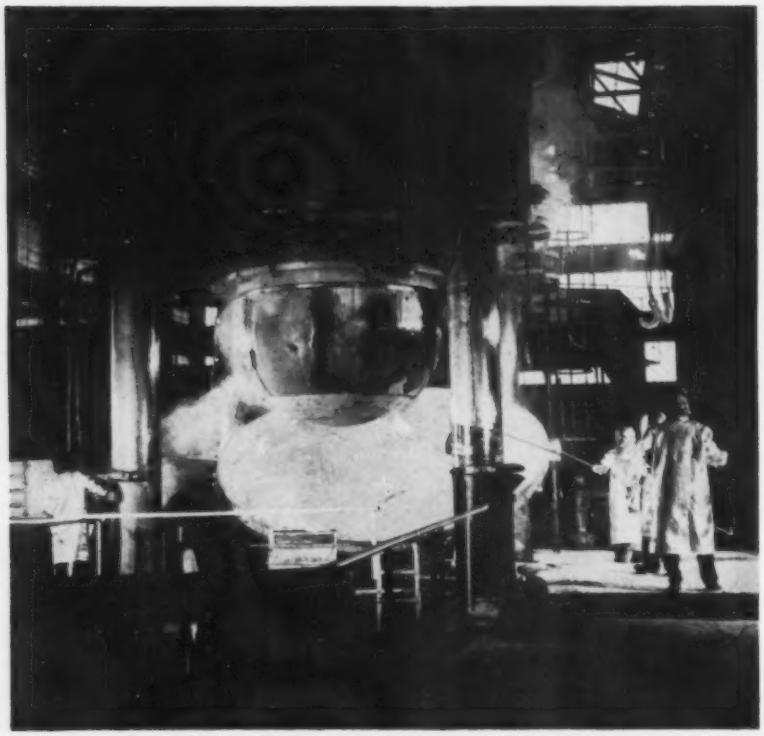
Largest, Thickest, Heaviest at One Stroke



RECORD: A hemisphere 11 ft across, 5½ ft deep was made from a 29-ton steel slab at a single stroke, between dies on a giant hydraulic press. Babcock & Wilcox Co., which did the work at its Barberton, O., works calls it the largest, thickest and heaviest pressure vessel head ever formed at a single stroke. It is for the pressure vessel of a nuclear reactor being built for Consolidated Edison Co. of New York.

G.M. Loses Tax Battle

A manufacturer is liable for the excise tax on the full sales price of its products, including the warranty charges, the U. S. Court of Claims now rules.

The court issued the ruling in a case involving the Frigidaire Div. of General Motors Corp. It held that the $5 paid by a buyer for a five-year manufacturer's warranty is taxable. The court dismissed a $2.5 million suit by G.M. for excise tax refunds, and in effect, blocked some 30 similar suits by makers of autos, home appliances, and similar goods.

G.M. had argued it should be able to deduct the money it spends making good on warranties from the sales price upon which the excise is based, as well as the extra $5 warranty fee. The court earlier agreed, but in two recent rulings reversed itself on both points.

Law Reserves Patents To the Gov't

Congress, in creating a new National Aeronautics and Space Administration to guide this country's space research and exploration, included a provision opposed by industry. Patent rights are reserved to the government.

The patent provision had been eliminated on the floor of the Senate, but was rewritten and restored by Senate-House conferees.

Provides — The original patent provision would have flatly reserved all patents developed under contracts with the new space agency to the government and permitted the government to license.

Under the bill as finally approved by Congress, title to inventions and discoveries made under, or as a result of, research or development contracts with the new NASA will be vested in the government if:

(1.) The inventor is employed on research work on an NASA contract and the invention is part of his job, or (2.) the invention is made "in relation" to a contract with the NASA.

The new provision permits an inventor to appeal for his right to retain title to inventions. It also retains the original provision that in cases where the government's patent rights are waived, the U. S. retains the right to license the invention in this country or abroad "on government business."

1957 Bad Scrap Year

Steel mills and foundries purchased and used less scrap in 1957 than in any year since 1949, except depressed 1954, says the Institute of Scrap Iron & Steel.

In its new yearbook, the Institute claims scrap processors and scrap brokers accounted for most of the 29.6 million tons of iron and steel scrap consumed by mills and founders last year.

Another 5.9 million tons was exported. And steel mills and foundries consumed 36 million tons of scrap produced in the course of their own operations.

Congress Windup

This year's session of Congress probably will end by mid-August.

Senate and House leaders have disposed of almost all important bills. The few remaining "must" items of legislation (reciprocal trade, tax cuts for small business, more social security) are to be shouted through both houses during the next two weeks.

Among the bills that appear to be headed for the scrap pile this year: Statehood for Hawaii, a requirement that firms planning to merge obtain government okay, and the Kennedy-Ives labor bill.

You asked for it . . . .

AND HERE IT IS . . .

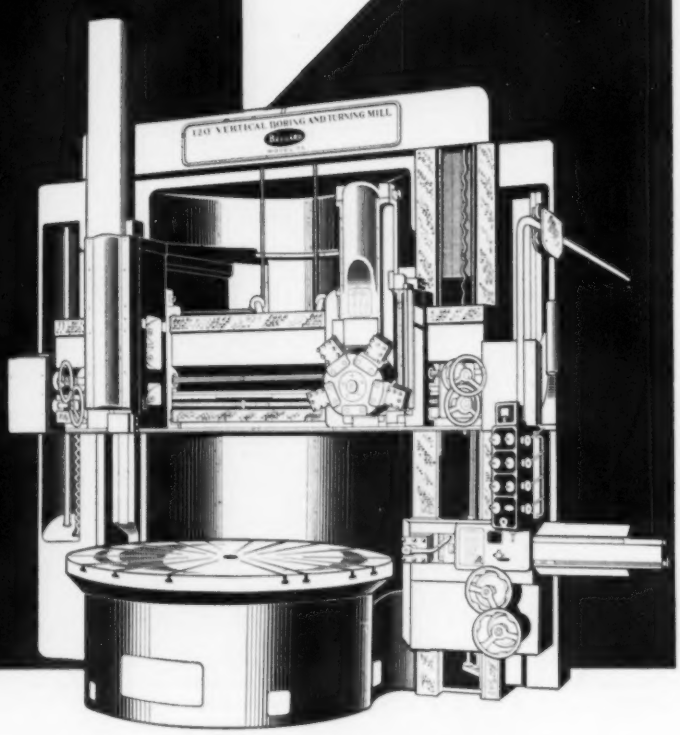
THE NEW

BULLARD 120"

VERTICAL BORING AND TURNING MILL

SWINGS 120" — TABLE SIZE 108"

Recognized for over seventy-five years as the leading builder of vertical turret lathes and boring mills, The Bullard Company has been repeatedly asked to build mills of a larger size incorporating the features of the Model 75 line.



The Bullard 120 Vertical Boring and Turning Mill is designed, engineered and built to meet this customer demand. Feature for feature — by comparison — you'll find it is the outstanding mill on the market today.

BULLARD

REMEMBER . . . to cut costs when cutting metal — Buy BULLARD

Check all the advantages — get the full story by calling your nearest Bullard Sales Office or Distributor.

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Introducing Allied's

IRILAC™ #1000

New Clear Protective Coating for All Metals . . . as safe and easy to handle as Water!

New method of protection incorporates corrosion inhibitors in a water-soluble polymer base. Dries to an extremely thin, tough, durable coating—clear in color. Does not chemically affect base metal or any post-treatments. Used as a protective treatment alone or to enhance value of post-treatments.

Allied's new Irilac #1000 is a concentrated solution of a water-soluble polymer with built-in complex corrosion inhibiting materials. It was developed to answer the needs of the metalworking industry for a non-conversion process that will provide corrosion resistance and resistance to fingerprinting and abrasion on base metals and electrochemically or chemically finished surfaces—without changing the appearance of the metallic surface.

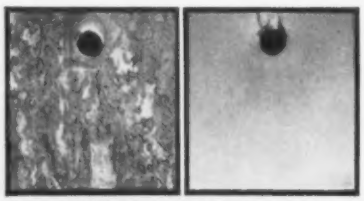
There are no hazards involved—Irilac is non-fuming, non-toxic, and requires no special fire prevention measures.

THE PROCESS

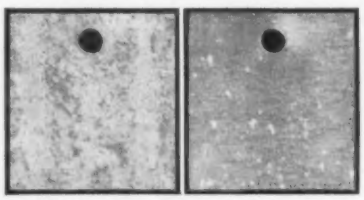
Irilac #1000 is diluted with water to provide a simple one-pass working solution. It is then applied by dip, brush or spray and forms a coating that quickly *bonds* to the metal surface without reacting with the surface.

THE PROPERTIES

The resulting coating is clear, transparent, thin yet durable. It has excellent water-resistant properties, and can be rubbed, handled and subjected to rough treatment. The surface to which Irilac has been applied is not altered—in fact, the transparent coating brings full tone to colored surfaces and clarity to iridescent surfaces. The water-thin physical characteristic of the solution means that the coating provides protection in recessed areas that are difficult, if not impossible, to protect with other methods.



STEEL PANELS: bare (left) and coated with Irilac (right) after 8-hour salt spray.



ALUMINUM PANELS: bare (left) and coated with Irilac (right) after 168-hour salt spray.

WHERE IRILAC CAN BE USED

Irilac #1000 can be applied to *any* metal—wet or dry—treated or untreated. All metals can be processed in *one* operation in the same solution. It can be applied in conjunction with any process—over Iridite, anodized, phosphated surfaces, black oxide, etc. Surfaces treated with Irilac provide a good base for paint.

APPLICATION ADVANTAGES

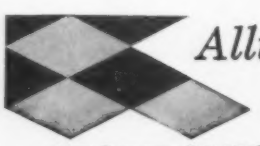
No other process or material available for the protection of metals offers all the application advantages found in new Irilac #1000:

1. It can be applied to any clean metal simply by dip, brush or spray. No special equipment is required.
2. Saves time—just apply and dry—no reaction time required.
3. No hazards involved—no exhaust or special fire protection equipment is required. Irilac is non-fuming and non-toxic.
4. Saves space. Presents no disposal problem. Low in first and final costs.

Because of its versatility and complete safety, Irilac has unlimited uses. For example, it will protect aluminum furniture, brass hardware and fixtures, steel parts of all types, zinc castings, etc. In fact, any base metal or plated surface, or those treated with electrolytic or chemical post-treatments, can be improved or enhanced with Irilac.

IRILAC #1000 MAY BE THE ANSWER TO YOUR PROTECTION PROBLEM

Our development staff will be glad to work with you to determine the significant benefits Irilac can offer you. Simply send us some parts and let us show you what Irilac can do. No obligation, of course.



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Albert J. Nesbitt

Executive Shoulders Civic Duty

This prominent Philadelphia businessman has amassed a remarkable record of service to the community.

His motivation: You can't neglect your community and expect business to flourish.

A. J. NESBITT: Businessmen must take part in community problems.

▪ It's doubtful if many businessmen in the nation can approach Albert J. Nesbitt's record of service to his community.

While functioning as president of John J. Nesbitt, Inc., a flourishing Philadelphia producer of heating, ventilating, and air conditioning equipment, he has managed to serve on the board of directors of no less than 14 welfare, religious, and social organizations.

A Hard Worker—It should be pointed out that Mr. Nesbitt's name wasn't added to these organizations' rolls merely for prestige or because he likes to collect titles. He is sought out by many groups in the Philadelphia area for his reputation as a hard worker.

The groups to whom he has donated his services have bestowed on him at least 10 awards ranging from a citation by the Philadelphia Council of Churches in 1950 for outstanding Christian service, to the Citizen Volunteer Award in April of this year for outstanding service to health and welfare services.

Businessmen's Duty—The question most likely to come up in most of our minds is "How does he find time to do all this and still run a business?"

To begin with, Mr. Nesbitt is dead serious about his responsibility to his community.

"More businessmen must spend time in solving community problems," he urges. "A businessman has no more right to ignore community problems than he has to ignore his firm's profits."

The Inducements—"If a community problem comes up and businessmen make no effort to solve it, the problem will get solved all right, but by somebody else," he explains. "Then they have no grounds to complain if the results don't please them."

"Businessmen must take active interest in community affairs if the soil in which corporations flourish is to be enriched," he warns.

To be effective, the average businessman should set aside 25 pct of his time for community work, Mr. Nesbitt estimates. In his own case, he allows at least that much time, and yet he runs his company with a firm hand.

Expert in His Field—John J. Nesbitt, Inc., has been meeting its planned growth rate of 10 pct a year for the past several years. Current sales are running about $20 million annually. In spite of the recession, the firm is operating at capacity.

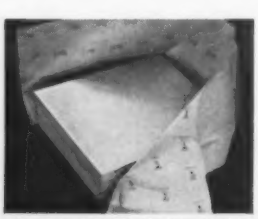
how to rustproof cold rolled steel in shipment and storage

Proved by actual test! Unwrapped steel rusted within a few hours. Identical steel wrapped in Ferro-Pak showed no signs of rust . . . even after several months. Non-toxic chemical vapors from Ferro-Pak coat the steel with an invisible film that makes it impossible for rust to get the slightest foothold.

Even under adverse conditions, such as outside storing or shipping, Ferro-Pak provides complete protection. It is waterproof, strong, yet highly flexible and easy to handle. The chemical rust inhibitor is compatible with oil and stays effective for long periods even when the humidity soars.

Whether you're a shipper or a buyer of steel, it will pay you to specify Ferro-Pak wrapping wherever rust is a problem. For an interesting idea brochure on many uses for Ferro-Pak, write Cromwell Paper Company, 4805 South Whipple Street, Chicago 32, Illinois.

How to rustproof a freight car—Ferro-Pak is used to line sides of car and to interleave coils, transforming ordinary freight car into huge rustproof package.



How to rustproof black plate—On this light gauge, dry, uncoated steel, rust can start from a fingerprint. Ferro-Pak keeps black plate rust-free even when the humidity soars!

FERRO-PAK®
by Cromwell

For over 38 years—
"Paper Engineers" for Steel

Consumer Confidence Perks Up

Measured by standards of 1956, consumers reflect considerable caution in their buying plans.

After a sharp drop in morale early this year, overall buyer attitudes indicate a definite upturn in general confidence.

▪ Whether businessmen admit it or not, most companies are going through a period of indecision.

They realize that most indications point to a gradual business upturn. But they are nagged by a series of doubts, with the all-important attitude of the consumer among the doubtful factors.

How Much Damage?—And with reason. The consumer has been through a period of sharp economic decline. Whether his confidence is severely shaken will have an important bearing on the rate of the business upturn, or even whether it will occur at all.

The highly authoritative survey of consumer attitudes and inclinations to buy, just released for June, 1958, by the University of Michigan Survey Research Center, gives a good cross section of consumer opinion.

Still Confident—Considering the seriousness of the recent decline, and the fact that unemployment has hit one out of every six families, the consumer remains encouragingly confident. He still indicates his willingness to make durable goods purchases, but with a tendency toward postponement.

Similar surveys have been conducted by the Center since 1951, at intervals of from two to three times a year. They provide a good reference point of consumer attitudes.

Upturn Reflected—A significant point is that consumer sentiment and inclination to buy are about the same now as in December of 1957. Since confidence obviously deteriorated shortly after the last survey, this implies a recent upturn in consumer confidence. This may be more significant than the actual comparison with the attitude of last December.

...But With Cautious Overtones

Underneath the overall feeling of better things to come are some overtones of continuing caution in consumer buying plans.

A leading point: Consumers' evaluation of their own finances has deteriorated. This, no doubt, stems from the fact that one out of every six families surveyed was affected by unemployment in the past year.

Job Concern — Furthermore, their evaluation of job possibilities is not good. They are much less optimistic now about the possibility of getting another job than they were two years ago.

Definite intentions to buy new durable goods are less frequent now than six months ago. But the survey draws some consolation from the fact that the proportion of families who are undecided or say "possibly might buy," is higher.

Cautious Optimism—Evaluating the course of the economy, the survey states that "the current findings make it appear improbable that consumer demand for durable goods will turn down further."

Underlying these attitudes are some economic facts: Fewer people said they were making more than a year ago. More said they were making less. More said they were worse off and, significantly, the change was greatest among upper-income people.

And the higher cost of living is reflected in that among the families reporting income increases, many felt they were no better off.

Willing to Defer

The survey tends to bear out the contention of those who have pointed to the "deferability" of durable goods purchases.

And all of the deferring is not attributable to lack of confidence. Another factor is the consumer's bargaining instinct. The average prospective buyer can not reconcile a recession to rising prices.

Many, firmly believing that prices of many products must come down, are holding off for the bargains they believe are inevitable. More look for a period of level or falling prices today than at any period since 1956, fewer look for rising prices.

But, at the same time, the number of people who believe this is a good time to buy is increasing, at least substantially over six months ago. But the "good time to buy" group is still well below the general level since 1954, and a full 10 pct less than in August of 1956.

AUTOMOTIVE

'Wagon Sales Buck the Trend

Their Share of Auto Dollar Is Growing Yearly

Whatever the reason, a growing number of Americans prefer the roomier station wagon.

Sales growth affects nearly all cars in low-to-high price range.—By H. R. Neal.

▪ Leisure-minded Americans are giving a strong vote of approval to at least one type of American-built car—the station wagon. With the station wagon "season" in the midst of its peak sales period, the industry is already ahead of last year's record pace.

So far this model year 'wagons account for 14.3 pct of auto production and sales, and could easily reach 15 pct by the time 1959 cars are introduced. This compares with 13.6 pct for the 1957 model year, and 11.3 pct for 1956.

Rambler Is Tops — American Motors still devotes the largest percentage of its production to station wagons of any automaker. Some 35 pct of 1958 Ramblers are station wagons.

While this is a 12 pct drop from last year's figure of 47 pct, the company is producing nearly double the number of vehicles as a year ago. Another factor contributing to the decline has been reintroduction of the small Rambler American. The American accounts for about 20 pct of current Rambler production, but isn't available in a station wagon.

Chrysler, Too—American Motors, which still has dies for an American station wagon, has said in the past it will revive the series if volume of the American warrants it. There are hints from the company that conditions warrant it for 1959 models.

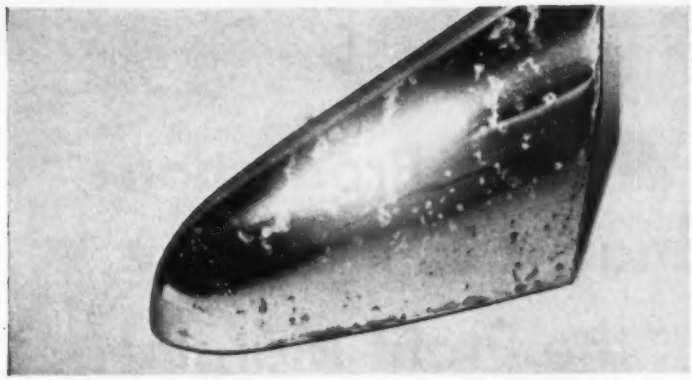
Whatever its other fortunes might be this year, Chrysler Corp. is seeing the station wagon boom sweep through its product lines as never before. Retail sales of its 'wagons have increased 16.4 pct over last year, according to Byron J. Nichols, group vice president - automotive sales. Currently they account for more than 21 pct of its sales—double the year ago figure.

Up, up, up—Mr. Nichols points to a steady increase in sales since the first of the year: January, 18 pct; February, 20 pct; March, 21 pct; April, 22 pct; May, 24 pct; and June, 27 pct.

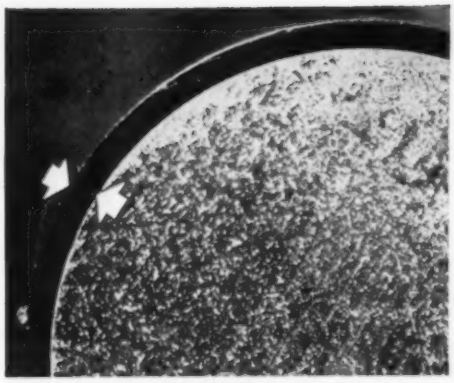
Leading the advance, he says, is the four-door, three seat model with observation seat facing the rear. "Specifically," Mr. Nichols

Some Features Stand the Test of Time

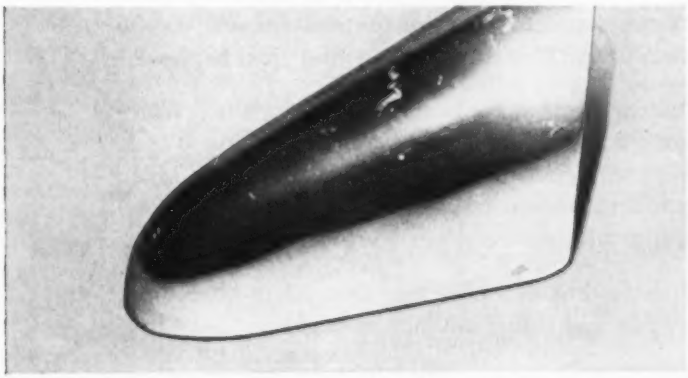
PROGRESS: Passengers in the 1922 Ford station wagon were protected by roll-down leather curtains. But this model had one feature still being stressed by the 1958 Ford Country Sedan—versatility. Rear seats of the 1922 car were removable to use the vehicle for deliveries.

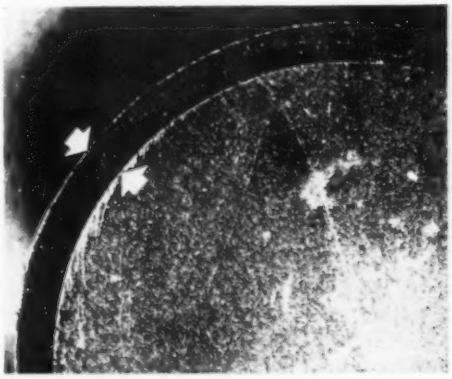


UNICHROME BRIGHT CRACK-FREE CHROMIUM MADE THIS DIFFERENCE IN PROTECTION. Photographs show results of 72 hour acetic acid salt spray test. Part at top was plated with ordinary chromium according to automotive manufacturer's specifications for copper, nickel, chromium finishing. Part at bottom had same copper and nickel deposits but Unichrome Crack-Free Chromium replaced the ordinary chromium, thus greatly increasing corrosion resistance.



UNICHROME SRHS® CHROMIUM MADE THIS DIFFERENCE IN THICKNESS. Enlarged cross sections of identical steel rods show ratio of thickness of plate from ordinary chromium solution (top) to thickness from SRHS Chromium Solution (bottom) . . . a much thicker deposit in the same plating time!





How to get more corrosion resistance from chromium plate

When consumers find fault with decorative chromium plate, it's generally due to early corrosion.

This trouble starts with pores and cracks that occur in all ordinary chromium in the range of thicknesses generally used for decorative plating. Road chemicals, salt atmosphere and fumes find a path right down to base metal. Corrosion starts. As corrosion increases, finish failure progresses, allowing still more corrosion.

But you can stop this at the source.

THICKER, CRACK-FREE CHROMIUM

Chromium itself is passive. It doesn't corrode. Eliminate pores and overcome its cracking and you greatly improve its corrosion *protection*. Pores are eliminated by thicker plating. To overcome cracking, use the Unichrome Bright *Crack-Free* Chromium Process. This deposit is free from corrosion-admitting cracks. It has already been used in automotive production for a year.

MINIMIZE YOUR PRODUCTION PROBLEMS

Unichrome *Crack-Free* Chromium is far superior to ordinary chromium not only in protection, but also in operating advantages. The solution is self-regulating. It offers improved throwing power, also better coverage — even over passive nickel.

TO PLATE THICKER CHROMIUM

For those who desire thicker deposits but do not require freedom from cracking, other Unichrome self-regulating processes offer distinct advantages. They plate up to 80% faster than ordinary chromium plating processes. They cover parts with less dulling or burning, are less susceptible to clouding due to current interruption. Control is simplified by their self-regulating features.

Whichever process is best for your operations, Metal & Thermit has over 30 years of service experience to help you make it work. Call in an M&T plating engineer to survey your requirements, tell you what's needed for the results you want. Or, send for Bulletins.

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At a cost of only a few hundred dollars, many plants (large and small) now save thousands of dollars per month.

Magnaflux provides these tools. Effective, low-cost test methods eliminate wasted production effort and permit holding consistent quality standards at any level you establish. These benefits provide a higher profit percentage. Or, if you prefer, a better product at a lower price.

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Automotive Production

WEEK ENDING	CARS	TRUCKS
July 19, 1958*	84,441	15,879
July 12, 1958	73,062	15,036
July 20, 1957	117,205	21,993
July 13, 1957	111,943	26,610
TO DATE 1958	2,426,147	483,002
TO DATE 1957	3,673,863	638,682

*Preliminary Source: Ward's Reports

says, "retail sales of these four-door observation seat station wagons are 154 pct ahead of last year for the first eight months of the 1958 model run."

Where Plymouth Stands—Plymouth has recently upped production of station wagons to nearly 30 pct of its current production—highest ratio of any Big Three make. Harry E. Chesebrough, Plymouth general manager, says more than one in every four units coming off the Plymouth assembly line during the 1958 model year has been a station wagon.

Plymouth, he says, expects to produce about 27 pct of its total 1958 model production in station wagons. This compares with 15 pct for 1957 model production.

Chevrolet and Ford—Chevrolet's portion of production devoted to station wagons has increased slightly to 14.5 pct of 1958 models, but is expected to reach 15 pct by the end of the run. A year ago 14.2 pct of Chevy passenger cars were wagons.

Ford, traditional volume leader among 'wagon makers, trails the 1957 model year—18.6 pct to 19.4 pct. However, the summer push should help restore at least part of the lost ground.

Studebaker-Packard has turned out 18.9 pct of its 1958 model cars in the station wagon series, up from 16.1 pct last year.

Affects All Price Ranges—But it isn't just car makers in the lower price classes which are finding more and more of their output coming out as station wagons. Many cars in the medium price group—and even those in the high price lines are showing percentage increases over last year.

Mercury leads this group, rolling up 17 pct of its sales. In the last 10 days of May, 'wagons took 18.8 pct of Mercury 1958 model sales and output. Station wagons accounted for 12.5 pct of Mercury's output in 1957.

Repeat Sales—Mercury marketing manager Robert J. Fisher says a survey made for Mercury shows some 95 pct of present 'wagon owners intend to purchase them again. Two out of three have no other car. Mr. Fisher says analysis of surveys show "the typical station wagon owner is younger, has more children, has a higher income and is more inclined to be on the go than the average car owner."

Edsel claims station wagons make up around 7 pct of its first model year production.

Dodge general manager M. C. Patterson says: "Last year we felt production of station wagons was exceedingly high when we found 12.2 pct of our orders were in that category. Yet, our 1958 orders indicate station wagons account for 13.5 pct of our production."

Buick, Pontiac Falter—De Soto production of station wagons has climbed to 6.0 pct of 1958 model production compared with 4.5 pct last year.

Chrysler says 4.73 pct of its new cars are 'wagons, against 2.97 pct in 1957.

Oldsmobile shows station wagons are taking a larger share of its production this year also: 4.5 pct vs. 4.2 pct a year ago. However, Pontiac station wagon production has slipped to 8.5 pct of the current model output from last year's strong showing of 9.6 pct. And Buick also registered a decline to 4.77 pct from 5.93 pct.

Play It Safe

It pays to have your car checked periodically. In a recent Safety-Check month, De Soto dealers found 63.8 pct of all new and used cars and trucks inspected in 10 safety categories were being operated "under hazardous conditions."

THE BULL OF THE WOODS

I DON'T SEE HOW A GUY WHO WEARS GLASSES, A RING, A WRIST WATCH AND SMOKES CIGARETS HAS ANY TIME TO LIVE!
GRAN'MA ONLY HAD GLASSES, AND A REPORTER ONCE SAID TO HER, "YOU MUST HAVE SEEN A LOT IN A HUNDRED YEARS!" "NOT MUCH," SHE SAID-- "EVERYTHING WAS ALWAYS OVER BY TH' TIME I'D FIND MY SPECS!"
THE SIDE LINES
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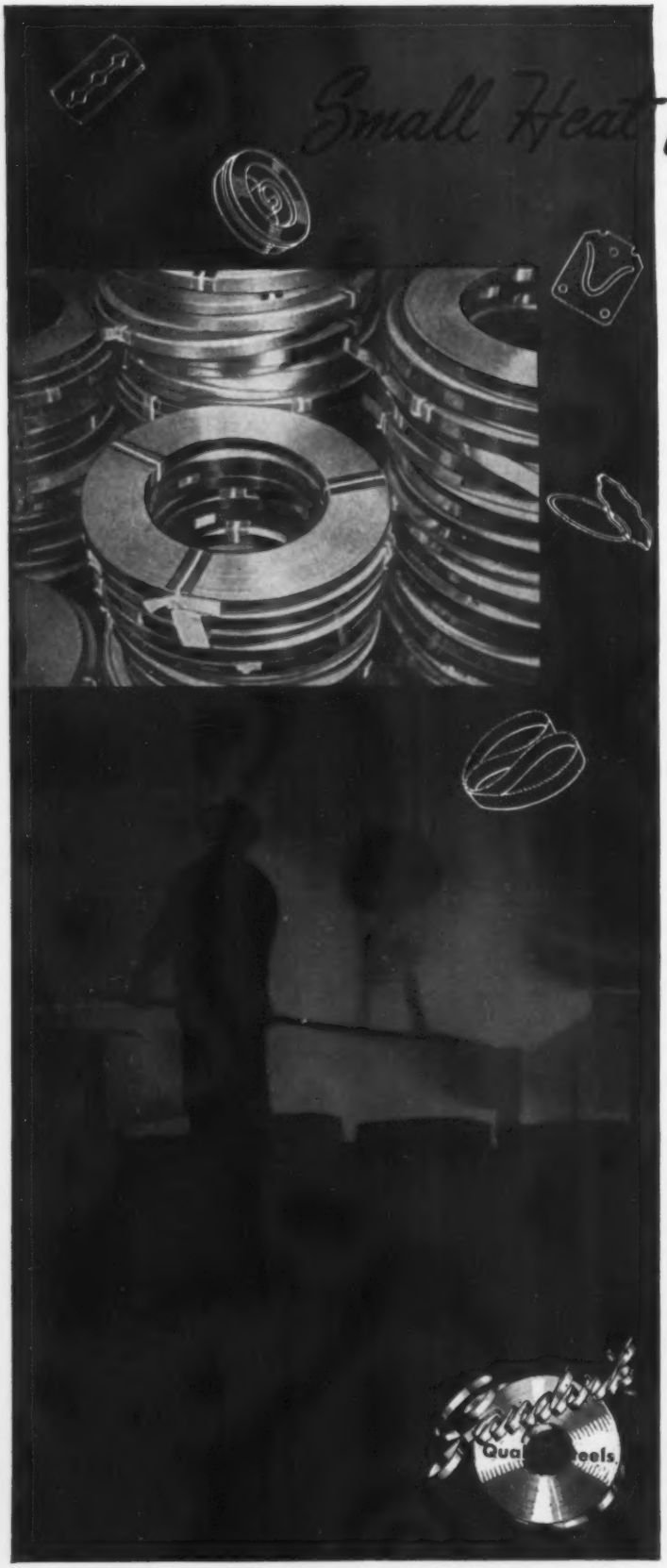

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Sandvik specialty steels are carefully produced in relatively small quantities which facilitate closer control and uniform results.

Pure Swedish ore and coniferous, sulphur-free fuel are used to produce pig iron of unusually high quality. Sandvik's small blast furnaces and steel furnaces afford closer control of the quality of each heat.

In the subsequent rolling and annealing operations, Sandvik applies its specialized experience, skill and equipment, — "tailoring" the steel to the precise gauge, hardness and surface finish required.

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You can get Sandvik strip steels:

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- **Precision-rolled in thicknesses to fit your requirements.**
- **In straight carbon and alloy grades.**
- **Annealed, unannealed or hardened and tempered.**
- **Polished bright, yellow or blue.**
- **With square, round or dressed edges.**
- **Wide range of sizes in stock — also slitting facilities available.**

Ask your nearest Sandvik office for further information or technical assistance.

Sandvik Swedish Specialty Strip Steels are used for Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) • Camera Shutters • Clock and Watch Springs • Compressor Valves • Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical, etc. • Razor Blades • Shock Absorbers • A Wide Variety of Springs • Trowels • Reeds: Vibrator, Textile, etc. • Piston Ring Segment and Expanders • and many other applications.

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Teeth Pulled From Labor Law

House Won't Go for Kennedy-Ives Measure

Compulsory registration of union pension and welfare funds can't get by the House.

"Inspection on demand" is about the limit you can expect this session.—By G. H. Baker.

▪ Here's what to expect in the way of new labor laws this year: Kennedy-Ives bill, despite heavy Senate approval, is dead. The House leaders wouldn't "buy" it.

What will be finally enacted, in August, will be a bill requiring that pension and welfare funds be made available for inspection, upon demand, to any employee who wants to know where the money's going.

Big Comedown—This is a far cry from the Kennedy-Ives bill, which requires compulsory federal registration of pension and welfare funds, and from the Douglas bill, which requires substantially the same federal control over pension and welfare plans.

Speaker of the House Sam Rayburn tells Chairman Graham Barden of the House Labor Committee he'll give a green light to the "inspection upon demand" bill. This will permit Democrats and Republicans alike to claim they voted for labor reform.

Unions Opposed — Unions will fight the move, of course, claiming it's only half a loaf. White House reaction shapes up the same way. Ike will sign reluctantly, claiming he's disappointed over lack of compulsory federal registration of welfare plans, but pointing out that employee and employer rights are upheld by the "inspection upon demand" approach to the problem.

Whatever the result, it will be a far cry from laws anticipated back when Dave Beck and Jimmy Hoffa were on the hot seat.

Defense Spending Continues to Go Up

Despite efforts to hold the line on defense spending, total outlays continue to creep ahead. The gradual inching forward of military costs is due primarily to the high cost of today's weapons (missiles, particularly). But part of the huge total (now running at the rate of around $42 billion a year) is due to the reluctance of Pentagon planners to close out outmoded or obsolete operations.

As missile and rocket design becomes more complicated, the unit cost of these modern weapons also rises. And research and development costs, particularly for advanced projects such as travel to the moon, come high.

But it's also true that the Pentagon is riddled with officers who still plan for what amounts to a mule-and-wagon type of warfare. In these planning circles, intercontinental missiles are dismissed as "crazy Air Force projects." Rifles, revolvers, and recollections of trench warfare is still uppermost in the minds of many generals. And there are members of Congress who agree, and who continue to fight for appropriations every year to keep alive the concepts of warfare (and the suppliers thereof) that were obsolete years ago.

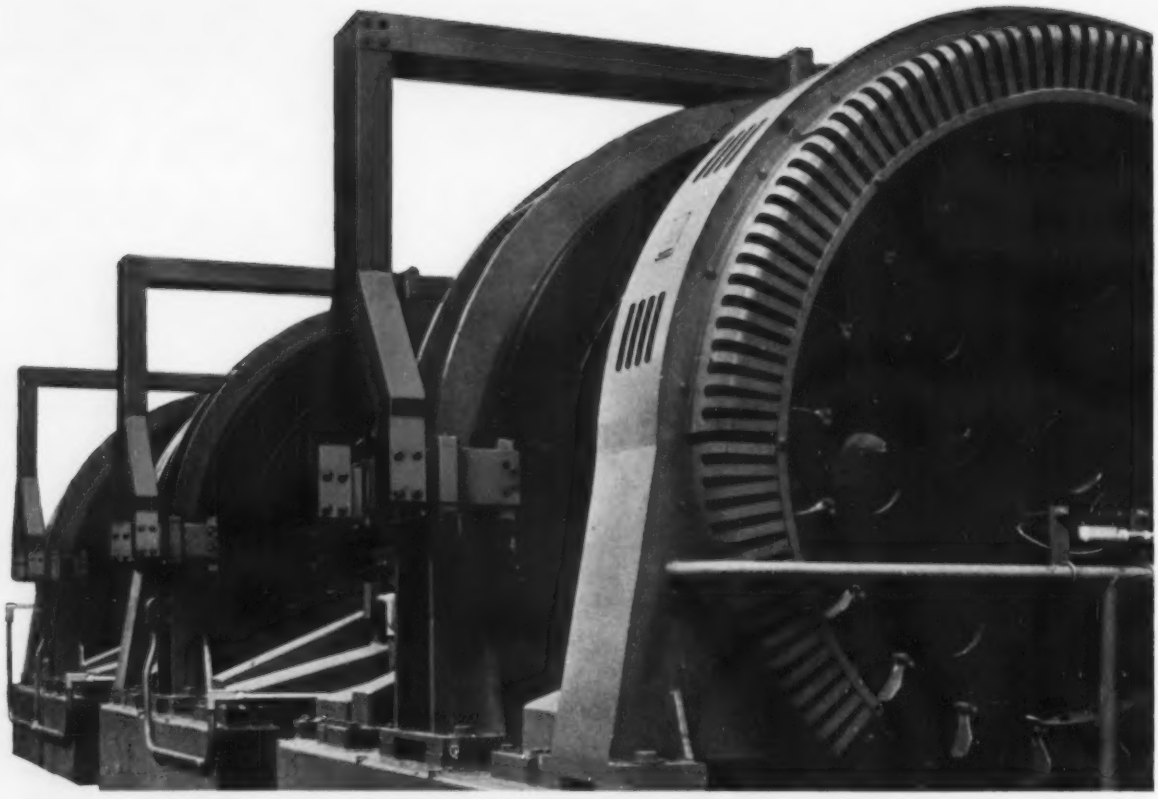
New AEC Head Is Metals Man

John A. McCone

▪ John A. McCone of Los Angeles brings a businessman's viewpoint to his new job as chairman of the Atomic Energy Commission.

Mr. McCone, successor to Lewis L. Strauss at AEC, has had a long and varied career in metalworking.

He began as a construction engineer with Llewellyn Iron Works. In more recent years, he was the president and organizer of Bechtel-McCone Corp., engineers, 1937-46; and president and director of California Shipbuilding Corp., 1941-46. Under the Truman Administration he was a member of the President's Air Policy Commission, 1947-48. He served as Under Secretary of the Air Force, 1950-51.



REVERE COPPER BUS BAR

used in two new 700-ft. long Udylite Bumper Plating Machines at

FORD MOTOR COMPANY

Aids in the production of a new, more durable, corrosion-resistant finish

Said to be the world's largest, the two Udylite plating machines are capable of turning out, per machine, 35 racks of bumpers an hour through 10 stages of a 3½ hour plating cycle. The electro-plating installation uses eighty generators, varying from 5,000 to 20,000 amps, which combined, provide enough power to light more than 150,000 bulbs of 100 watts each.

To carry that kind of a load from generator to plating machine, Revere Copper Bus Bar was used because of copper's superior electrical and heat conductivity. No other commercial metal of the same cross-section area approaches electrolytic copper in its ability to carry electricity, while its high thermal conductivity offers the greatest ease of cooling. This means a more compact installation with a resultant saving in space. Also, joints of high electrical conductivity are readily made by soldering, brazing or bolting. For information on Revere Bus Bar, as well as other Revere copper and brass mill products consult the nearest Revere Sales Office. You'll find it listed in the yellow pages of the telephone directory.

RACK OF BUMPERS ready for immersion into plating solution at Ford Motor Company's plant at Monroe, Michigan. New process uses copper, white brass, nickel and chromium which results in outstanding durability.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

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How Missilemaking Will Develop

Planemakers Are Planning to Hold Their Lead

Even if government gives subcontractors lead in missile building Farwest aircraft firms won't be out in the cold.

They'll ally themselves with other suppliers to stay deep in missile work.—By R. R. Kay.

▪ No matter how you look at it, the West Coast will figure in the missile picture. The "old line" airplane companies are already deep in missile work. They hold prime contracts on four of the six Defense Department's "DX" super-priority missile-satellite programs. These are Convair's Atlas, Douglas' Thor, and Lockheed's Polaris and reconnaissance satellite. And Boeing has the Bomarc.

Missiles accounted for 27 pct of sales at Douglas last year. Lockheed will take in 25 pct of this year's receipts from missiles and satellites. Northrop's guided missile backlog is 57 pct. And North American is building engines for the Jupiter, Thor, Redstone, and Atlas.

Other major West Coast planemakers in missile work include: Convair, building airframes for four big "beasts"; and Hughes, producing the Falcon and airborne electronics equipment.

Look at the Future—With the majors having such a strong hold, what's the outlook for the subcontractors and the thousands of little shops who cluster around the big plants?

Lockheed Aircraft President Courtlandt S. Gross sees it this way: "There is in the Los Angeles area a big foundation of supporting industry, supplementary and accessory to the major air companies. If the government follows a plan of assigning air companies the dominant role, this supporting industry will continue in its historic form. Undoubtedly it will grow.

Mergers Possible—"If, on the other hand, the supporting industry is given the dominant role by the government, the air companies in one way or another—whether by absorption, merger, partnership, or other means—will have to ally themselves in such a way that the volume of business available to them will be adequate to keep them thriving and growing," Mr. Gross says.

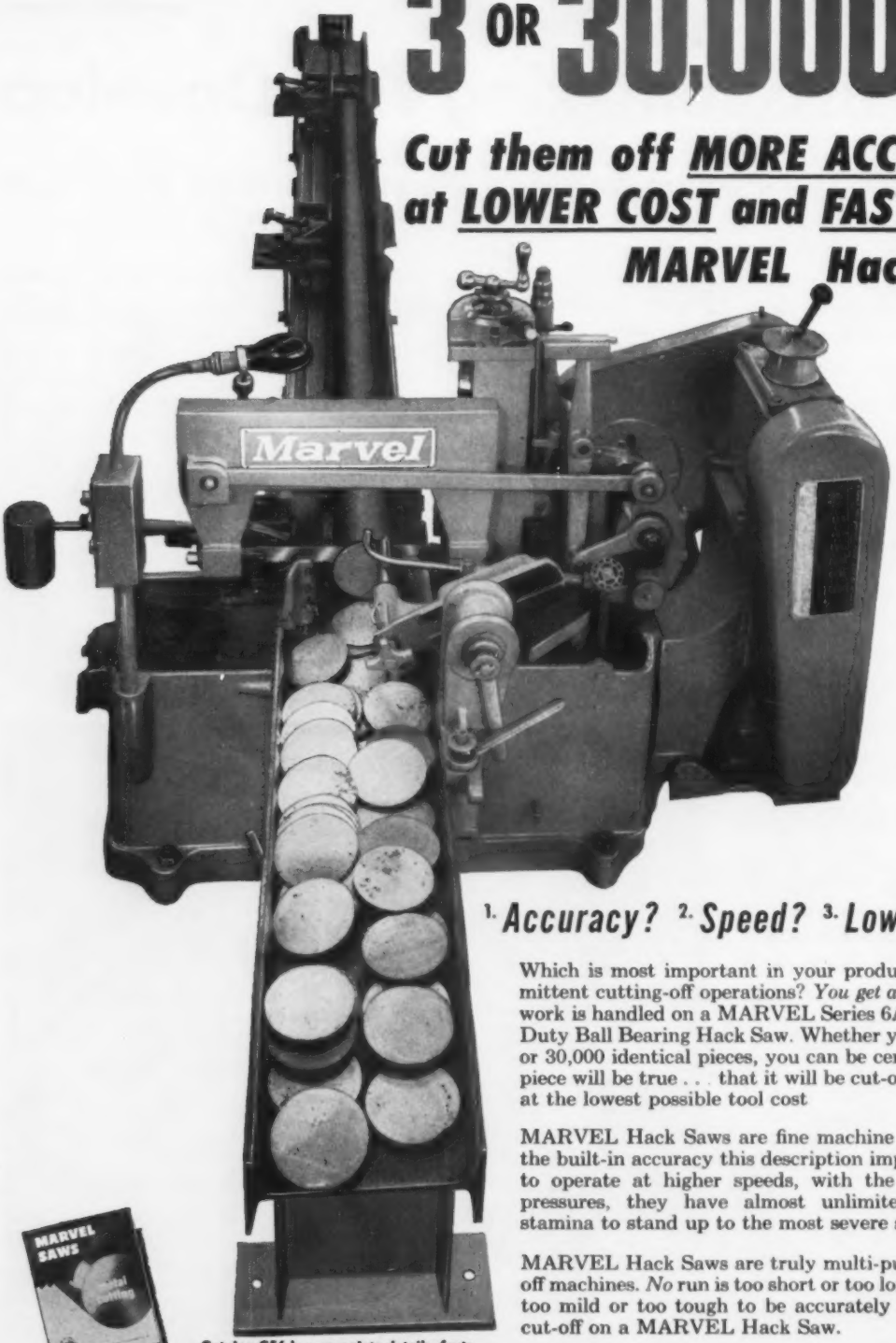
California is booming as a center of missile testing. This, too, will help strengthen its missile manufacturing. Right now there are thriving test facilities at Point Mugu, China Lake, Edwards and Cooke Air Force Bases. The Navy-run Pacific Missile Test Center at Pt. Mugu, just north of Los Angeles, may soon rival the Air Force's Cape Canaveral, Fla.

Missile Gets Assist in Low-Level Travel

FACTORY VIEW OF ICBM: Overhead crane transports Air Force Atlas intercontinental ballistic missile across high-bay area at Convair's San Diego plant. Manufacture of the ICBM is now under way there.

3 OR 30,000 PIECES

Cut them off MORE ACCURATELY at LOWER COST and FASTER on a MARVEL Hack Saw



1. Accuracy? 2. Speed? 3. Low Cost?

Which is most important in your production or intermittent cutting-off operations? *You get all 3* when your work is handled on a MARVEL Series 6A or 9A Heavy Duty Ball Bearing Hack Saw. Whether you're cutting 3 or 30,000 identical pieces, you can be certain that each piece will be true . . . that it will be cut-off quickly, and at the lowest possible tool cost

MARVEL Hack Saws are fine machine tools, with all the built-in accuracy this description implies. Designed to operate at higher speeds, with the heaviest feed pressures, they have almost unlimited power and stamina to stand up to the most severe service.

MARVEL Hack Saws are truly multi-purpose cutting-off machines. *No* run is too short or too long, *no* material too mild or too tough to be accurately and efficiently cut-off on a MARVEL Hack Saw.

Catalog C56 has complete details, facts and figures on MARVEL Metal Cutting Saws. Write for it today.

S-1306

ARMSTRONG-BLUM MFG. CO.
5700 BLOOMINGDALE AVE. • CHICAGO 39, ILLINOIS

MARVEL Metal Cutting SAWS
Better Machines–Better Blades

Trend Is to Tighter Tolerances

To Tool Users, This Means Better Reliability

Tool users are thumping for more precision products that don't need frequent repairs.

Gage makers say this means closer tolerances. Federal is holding seminars to instruct industry.—By E. J. Egan, Jr.

▪ Do you make machinery? Anything with moving parts? Get set for a howling demand to improve its reliability. For you, this will mean more precision in manufacturing.

There's a drive to tighten tolerances in assemblies of all types. In many cases, the demand is for fits within a few millionths of an inch. And these are realistic demands, not just somebody's idea of good hunting. With missiles, for example, the problem of closer fits, more accurate dimensions, is deadly serious. And it may be just as serious for civilian goods tomorrow.

What They Want—Figure it out. Customers are yammering for precision products that work right, don't need frequent repairs. They'll get what they want. Somebody will work to millionths, if that's what it takes.

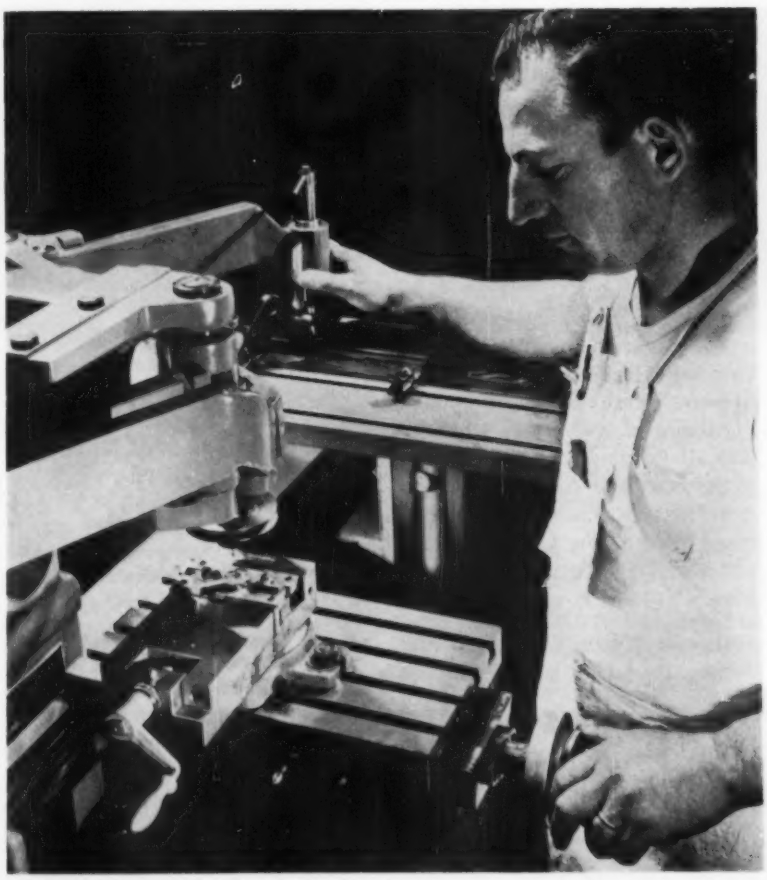
Gage makers see this push for more product reliability building up. One of them, Federal Products, Corp., is alerting production and quality control engineers and executives to just what it involves.

At its Providence, R. I., headquarters, the firm holds a three-day seminar once a month on "precision measurement for product reliability." It's not primarily a show for Federal's gaging devices. The program includes competitive techniques and equipment. Its theme, pointed at a new era of precision assembly, asks, "Is your gaging equipment adequate for the tolerances and type of measurement required?"

Seminar Sessions — In sessions lasting eight to ten hours a day, seminar attendees look, listen, and ask a lot of questions. Through lectures, movies, and do-it-yourself sessions, they get the whole picture of modern precision gaging.

The lineup includes dial indicators, air gages and comparators, electric and electronic devices, interferometry, and optical gaging.

New Plant Features Precision Tools



PANTOGRAPH: An irregular cam for the gear mechanism of a missile component is cut, at 10 to 1 reduction, on a pantograph, one of the precision machine tools assembled at the new Chatsworth, Calif., plant of Micronics Div., Elgin National Watch Co.

INDUSTRIAL BRIEFS

In Competition — Metals Engineering Corp., a new $1 million corporation for the production of metal stampings, has been announced for Greenville, Tenn. A plating, drill press, punch press, diecasting, tool and die and inspection department will comprise the initial operation, which will get underway this fall.

Research Expands—A $1.2 million addition to the metals research building at Armour Research Foundation of Illinois Institute of Technology, Chicago, will be dedicated on Oct. 20. The event will mark the completion of the second step in a 10-year expansion program announced by the Foundation early in 1956.

By a Dam Site—A contract for construction of the New Cumberland Dam on the Ohio River at Stratton, O., has been awarded to Dravo Corp., Pittsburgh, by the U. S. Army Corps. of Engineers. Work will begin by August 1. Dravo was successful low bidder with a price of $13.4 million.

20-20 Vision—New trade mark is being introduced by Cleveland Grinding Machine Co., Cleveland, to better identify its major product, a grinding machine with a built-in optical system. Market acceptance of the new VISUAL GRIND trade mark was determined at the National Metals Show in November and the Tool Engineers Show in May.

Oxygen Under Glass — A new oxygen producing plant built for Kimble Glass Co., subsidiary of Owens-Illinois Glass Co., Columbus, O., has been placed in operation. The plant is capable of producing 10 tons of high purity oxygen a day. Located on property adjacent to the Kimble manufacturing facilities, the plant was built, and will be maintained and operated by Linde Co., Div. of Union Carbide Corp.

Orient Bound — An order for over $1 million has been received by General Electric Co. from the Wean Engineering Co., Inc., of Warren, O. The order is for a fuel-fired and electric furnace for the Yawata Iron & Steel Co., Ltd. of Japan. Annual capacity of the furnace will be about 375,000 tons.

To 49th State—A contract for installation of two inter-battery microwave communications systems between Nike missile sites and anti-aircraft operation centers (AAOC) in Alaska has been awarded to Philco Corp.'s Government and Industrial Div. The $1 million contract was awarded by the U. S. Army Engineer District, Alaska.

Down by the Ohio—The formation of the Ohio River Chemical Co. for the manufacture of caprolactam has been announced by Industrial Rayon Corp. and Spencer Chemical Co. New company will construct and operate a 20-million lb caprolactam plant near Ashland, Ky. Initial cost of the facility will be about $10 million.

Fast Shoveling—The Mead-Morrison Div., McKiernan-Terry Corp., Harrison, N. J., has a contract for the construction of a new traveling coil unloading tower for Montaup Electric Co., Somerset, Mass. It will have a free-digging capacity of 800 tons per hour on a 36-second cycle, and is scheduled for completion in October, 1958.

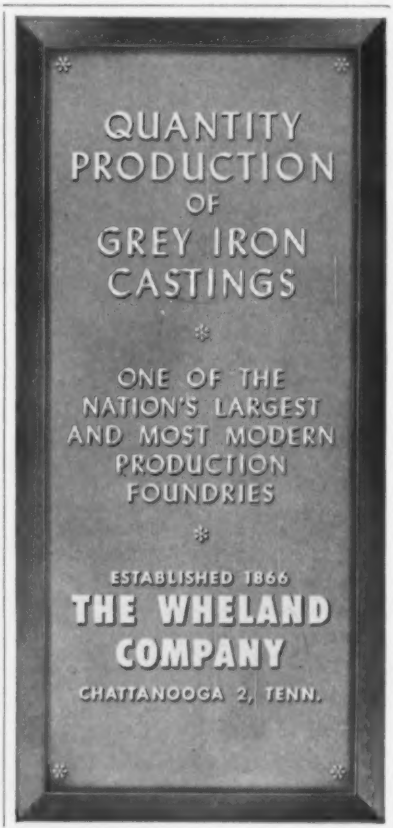
Interservice Cooperation — A $6.7 million Navy contract was awarded to Baker Industrial Trucks for 450 gas engine fork trucks to be delivered to the Army Quartermaster Corps. The 6000-lb capacity trucks are designed to move supplies from landing craft to inland storage areas. They will operate in five feet of water.

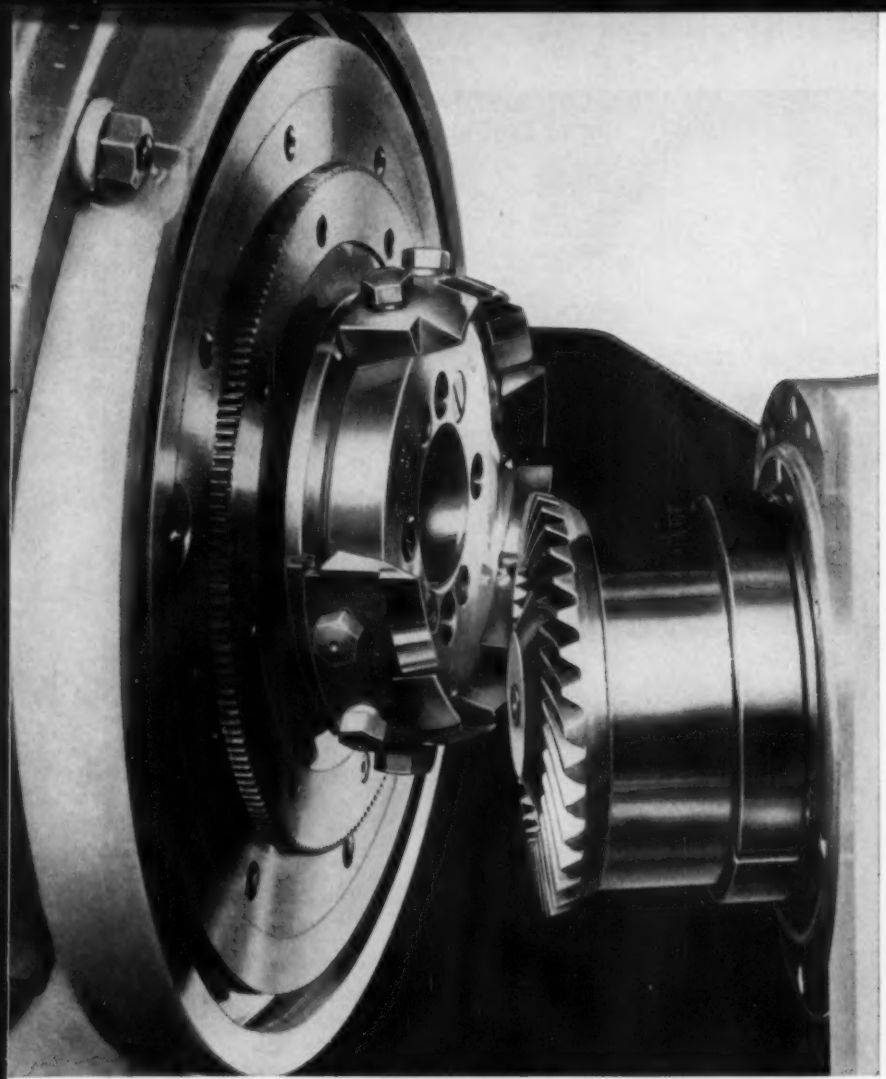
Rheem Goes Down Under — Rheem Mfg. Co. has formed a subsidiary company in New Zealand to manufacture steel shipping containers. Rheem New Zealand Ltd., will build a manufacturing plant in Wellington, New Zealand. Production of drums and shipping containers for oil companies is scheduled to start in mid-1959.

Futuristic Foundry—General Electric Co.'s $750,000 advanced foundry lab has just gone into full operation. The Schenectady facility is developing advanced methods of foundry technology. New materials are also being explored.

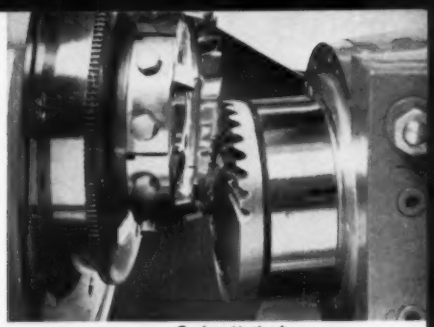
More Research at A-L — Allegheny Ludlum Steel Corp. will build an addition to its laboratory research center at Brackenridge, Pa. The new metallurgical laboratory is the largest unit currently planned for Allegheny Ludlum's centralized research facilities at the Brackenridge location. It is scheduled for occupancy during the summer of 1959.

To the Capital—Thompson Products, Inc., of Cleveland, has opened an office in Washington, D. C. The office will be located in the National Grange Bldg. on Lafayette Square.

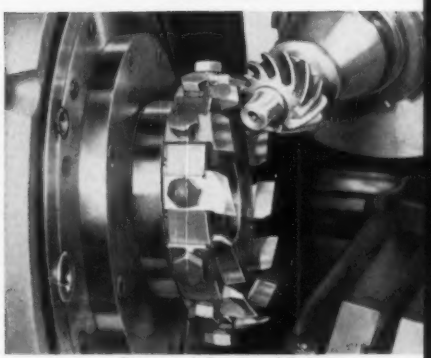




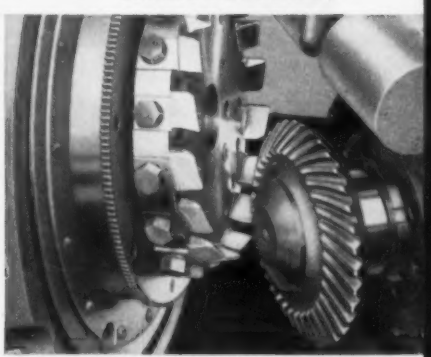
Single Cycle Method



Cyclex Method



Generated Gears and Pinions



Unitool Method

Cut gears with *four* different methods on *one* machine

If you expect your gear needs to change over the years you'll appreciate the exceptional versatility of the Gleason No. 108 Hypoid Generator. With this one machine you can cut both gears and pinions by four different methods:

Single Cycle® Method. Using this method you can cut nongenerated gears four to five times faster than previously possible on machines of this type. Cradle and work head are locked in position. The last rotation of the Single Cycle Cutter finishes both sides of a tooth space. You cut the mating pinions on the same machine using the conventional single-roll Generating Method.

Cyclex® Method. For certain applications you can use the extremely fast Cyclex Method on the No. 108 Generator. You cut nongenerated gears in one completing operation from the solid blank.

Generated Gears and Pinions. You can produce both gears and pinions on this machine with the Generating Method. Here, a relative rolling motion takes place between gear or pinion and the rotating cutter.

Unitool* Method. If you want to cut small quantities of spiral bevel, Zerol® bevel, or hypoid gears with a minimum of tooling, you can use the Unitool Method. You cut both gears and pinions with a single cutter. This method is particularly useful for experimental gears for prototype work.

The No. 108 Generator cuts gears up to 8½" diameter at a 10:1 ratio and to a maximum of 4 DP. You can get the same versatility in cutting larger gears with the No. 118 Hypoid Generator which handles gears up to 18" diameter, 10:1 ratio, to a maximum of 2 DP. A third model, the No. 29 Hypoid Generator, cuts gears up to 33" diameter at 10:1 ratio, 1½ DP.

Send for free bulletins on all three machines.

*Trademark

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Builders of bevel gear machinery for over 90 years

1000 UNIVERSITY AVE., ROCHESTER 3, N.Y.

Contour machining of an aft dome for a U.S. Army missile.

FOR MISSILES HARDWARE . . . investigate our ingenuity and ability to produce in a hurry

We have delivered aft dome rings, nozzles and sustainer parts in time to meet the most exacting requirements for production and test firing. We won't promise in advance we can solve all your missiles hardware problems on a quick delivery basis. But we invite you to look into our unusual service. Standard Steel Works boasts the facilities to produce anything—forgings and rings from 4130 aircraft quality analysis or special to-order analyses—*in a hurry*.

Man is beginning to conquer outer space. Standard is ready to play its part in this history-making achievement. We think you will find our combination of personalized service and know-how unique in the steel industry. Write Dept. IG.

Standard Steel Works Division
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BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

J. R. Hursh, named chief engineer, products engineering, Armco Drainage & Metal Products, Inc., Middletown, O.

N. H. Wolf, Jr., elected president, Tube Methods Inc., Bridgeport, Pa.

B. W. Reeve, elected president, Lake Shore, Inc.

C. E. White, elected president and chief operating officer, Ungava Iron Ores Co., Montreal, Canada.

R. M. Johnson, appointed president, Koehler Aircraft Products Co., Dayton, O.

F. A. Huhn, appointed asst. vice president, accounting, U. S. Steel Corp., Pittsburgh.

W. B. Bernstrom, promoted to manager, appliance and equipment market, Reynolds Metals Co., Richmond, Va.

F. L. Murphy, appointed asst. vice president, railroad lading protection products' sales and service, Pullman-Standard Car Mfg. Co., Chicago.

R. G. Horner, appointed vice president, marketing, The Black & Decker Mfg. Co., Towson, Md.

K. J. Brownell, appointed vice president sales, Bearing Div., and **M. L. Brody,** as sales manager, Bearing Div., McGill Mfg. Co., Inc., Valparaiso, Ind.

C. W. Sinclair, appointed vice president, engineering for all divisions, Kelsey-Hayes Co.

R. C. Downie, appointed asst. to the president, National Electric Products Corp., Pittsburgh.

E. W. Schnabel, named manager, tool and die materials, St. Louis district sales office, Allegheny Ludlum Steel Corp., Pittsburgh.

H. L. Harner, appointed Western regional sales manager, Alloy Tube Div., The Carpenter Steel Co., Union, N. J.

Dr. C. M. Marberg, appointed manager, technical services, Container Div., Jones & Laughlin Steel Corp.

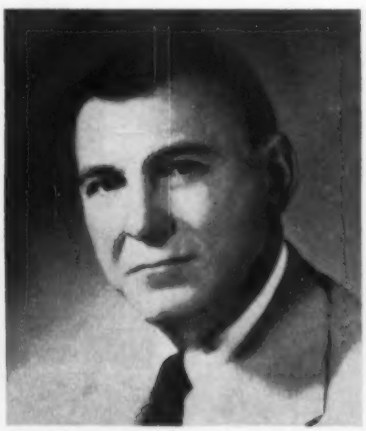
Paul Buker, appointed supervising product engineer, Armco Drainage & Metal Products, Inc., Middletown, O.

R. L. Haney, appointed manager, Philadelphia district, and **C. E. Dandois,** as manager, Allentown, Pa., district, Allis-Chalmers Industries Group.

T. P. Morgan, appointed controller, Consolidated Electrodynamics Corp., Pasadena, Calif.; **C. W. Andrews,** promoted to asst. controller.

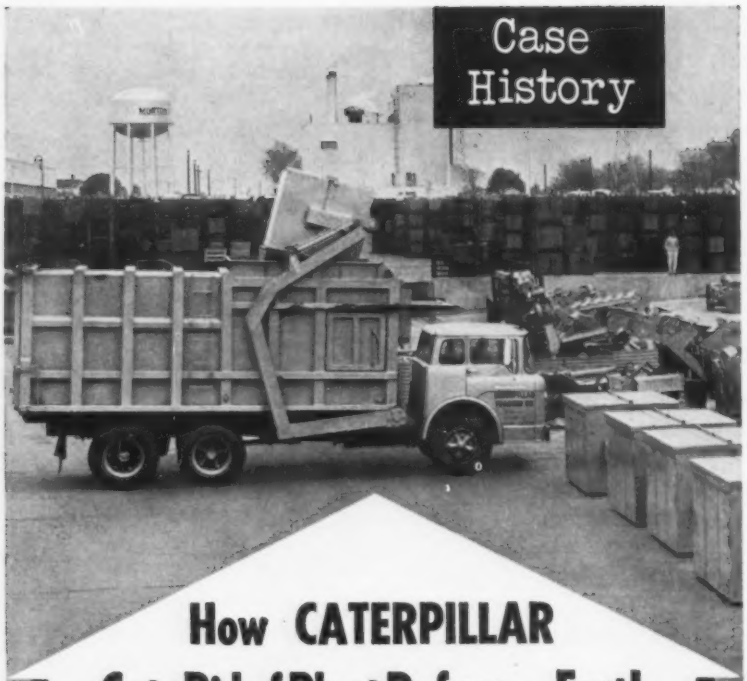
A. S. Dubinsky, appointed director, purchases, Alloys & Chemicals Mfg. Co., Inc., Cleveland.

P. W. Bakarian, appointed president and general manager, R-N Corp.



A. F. Finkl, appointed vice president, national sales, A. Finkl & Sons Co., Chicago.

S. L. Weaver, named district sales manager, Chicago office, Latrobe Steel Co., Latrobe, Pa.



How CATERPILLAR Gets Rid of Plant Refuse... Fast!

At the Morton, Ill. Plant of the Caterpillar Tractor Co. huge quantities of trash and rubbish are generated at many indoor points every day. Containers are placed at these points, and as each is filled, a fork lift truck brings up an empty and carries the full one to the outside pick-up line. Here, the DEMPSTER-DUMPMASTER takes over. Moving down the line, the driver automatically dumps the contents of each container into the 24 cu. yd. packer body, where the material is compressed to a fraction of its former volume. This assures big pay-loads on every trip to the disposal area. Trash and rubbish are enclosed at all times . . . can't blow or scatter . . . fire hazard is reduced to a minimum.

THE DEMPSTER-DUMPMASTER

The DEMPSTER-DUMPMASTER is economical! One-man operation. Big pay-loads from 50 to 100 cubic yards. It's safe! Clearance lifting arms never pass the cab windows, can't injure the operator. It's versatile! Handles containers below grade or from docks. Can be used for manual loading routes. Containers available in one through six cubic-yard capacity, with or without casters.

Dept. IA-7, DEMPSTER BROTHERS, Knoxville 17, Tenn.

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Please Send Without Obligation Your Booklet, "How to Reduce Waste Disposal Costs."

NAME..... TITLE.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....

W. E. Rothfelder, promoted to manager, Commercial Research Div., Inland Steel Co.; **Morris Caminer,** promoted to asst. manager.

A. E. Franks, appointed manager, operations, Johnston & Funk Titanium Corp., Wooster, O., subsidiary of Mallory-Sharon Metals Corp., Niles, O.

E. H. Ashton, promoted to general supervisor, Traffic Dept., Traffic and Transportation Div., Jones & Laughlin Steel Corp., Pittsburgh.

R. E. King, appointed distribution equipment sales manager, Square D Co., Detroit.

J. B. Hunt, appointed asst. general manager, Philco Corp.'s Government and Industrial Div., Philadelphia.

Following appointments are within Wheeling Steel Corp.'s Benwood, W. Va., Works. **C. D. Thurnes,** appointed superintendent, Continuous Welding Furnaces and Primary Finishing Dept.; **L. F. Jagucki,** ap-

pointed superintendent, Finishing, Warehousing and Shipping Depts.; **R. P. Long,** appointed superintendent, Engineering and Yards.

A. S. Bunday, appointed district sales manager, Chicago office, National Steel Corp.; **J. J. Gallagher,** named asst. district sales manager, Chicago.

W. R. Barber, named administrative manager, Metallurgical Dept., Electric Steel Foundry Co., Portland, Ore.; **J. E. McQuaid,** becomes general sales manager, and **D. G. Johnson, Jr.,** joins the Sales Dept. as asst. general sales manager.

W. L. Disston, appointed regional sales manager, Defense Div., Western region, The Budd Co., Philadelphia.

D. O. Bielenberg, appointed distributor sales manager, Pheoll Mfg. Co., Chicago.

P. J. Fountain, appointed manager, stainless steel sales, Boston steel service plant, Joseph T. Ryerson & Son, Inc.

R. E. Reid, promoted to general manager, Hyprez Div., Engis Equipment Co., Chicago; **W. B. Panko,** appointed national sales manager, Hyprez Div.

Joseph Meisler, appointed technical commercial manager, Cryogenics Dept., Philips Electronics, Inc., Mount Vernon, N. Y.

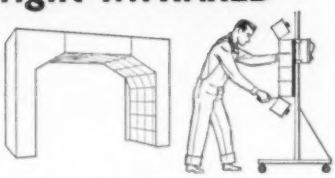
T. J. Costello, appointed asst. superintendent, Transportation and Labor Dept., Indiana Harbor

INFRA-RED fostoria SYSTEM

radiant heating news

to help manufacturers improve production operations

How to choose the right INFRARED for radiant ovens...



Consider, first of all, that processors using infrared generally find *electrical* radiant heating superior. Here are three good reasons:

1. *Greater Control.* Heat is directed more accurately to product at variable rates, and easily controlled.
2. *Cleaner.* No products of combustion exist in electric infrared ovens.
3. *Reliable supply.* Electricity is the modern fuel always available in large quantities.

Source factors to consider. Of all electric infrared sources, only these are proved practical for general industrial use in radiant ovens:

1. Clear glass lamps (G-30 type)
2. Quartz lamps (tubular shaped)
3. Quartz tubes (tubular)
4. Metal sheathed rods (tubular)

Each of these heat sources has distinct characteristics. All have advantages and disadvantages under certain conditions, as listed in chart below. A choice should be made only after evaluating each according to the following factors:

• Heat output (intensity)
Determine intensity (or heat rating) you require—the amount of heat in watts or BTU available per square inch or square foot. No need to select high-watt rated sources if not needed.

• Efficiency
Electric infrared oven users obtain a reliable rating in watts or BTU delivered to heat source at all times. *Radiant efficiency* of electric infrared sources vary according to their temperature. The higher this temperature, the greater is radiant efficiency. Sources that operate at lower temperature give off more convection heat, less radiation. Efficiency of an electric infrared oven also depends on proper selection of *reflecting surface, contour of reflector* and *oven design.*

• Speed of response
How quickly oven reaches operating temperature is important in many applications—and so is the speed with which oven cools down. If "override" temperatures present a serious problem, heat sources with instant response are preferred.

• Visible light output
When *brightness* of heat source is not important, consider sources that operate at 4000°F; these give more heat as *radiation* and are more efficient.

• Color sensitivity
In skillfully engineered infrared ovens using high temperature (4000°F) sources, products of various colors will process simultaneously with excellent results. When using *low-brightness* sources which operate at low temperatures (1400°F), satisfactory results will also be obtained in heating various colors.

• Life expectancy
Glass or quartz lamps are naturally more subject to physical breakage than metal rods. Pyrex and quartz lamps, however, do withstand water spashing. In well-designed ovens, the life of all infrared sources should exceed 5000 hours under normal operating conditions.

• Cost factor
Costs vary among infrared sources, so cost differences can be justified only after evaluating job requirements. Low-priced infrared lamps can be used if they do the job. Requirements for faster heating, for higher intensity, for extra ruggedness, and other factors usually dictate the choice of heat sources. It's almost automatic.

We will gladly advise you. You will get unbiased counsel when we help you select the right heat source. No other infrared supplier can offer you *all* practical sources—and none provide such complete service *before and after the sale.* Proper design, skilled installation and continuous efficient performance with greatest economy are assured.

Send for free 20-page book, "Radiant Heat—Applications Unlimited." If you include your application data we will gladly include recommendations in our reply. Write to Department 724.

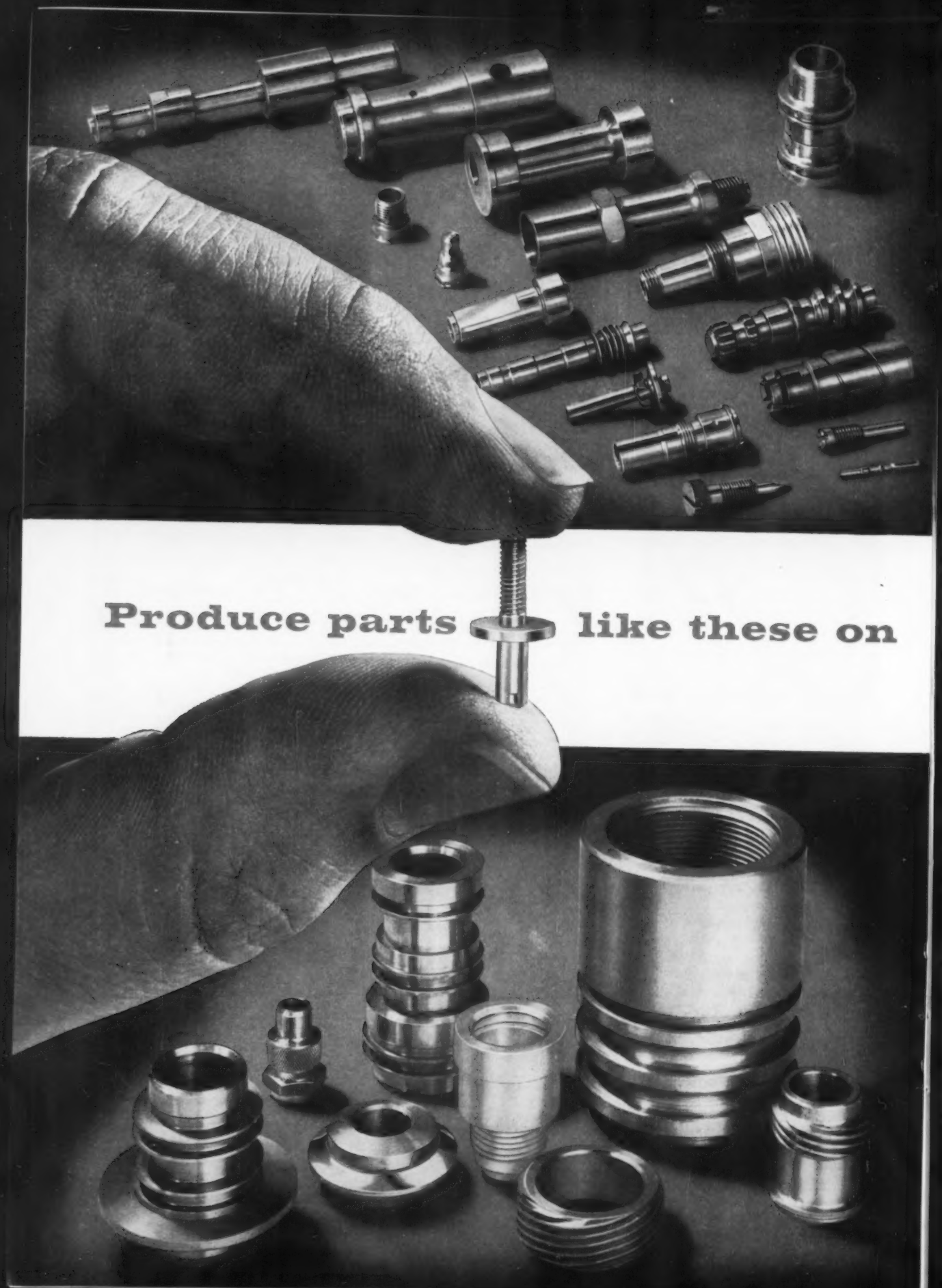
Comparison Of Infrared Heating Sources

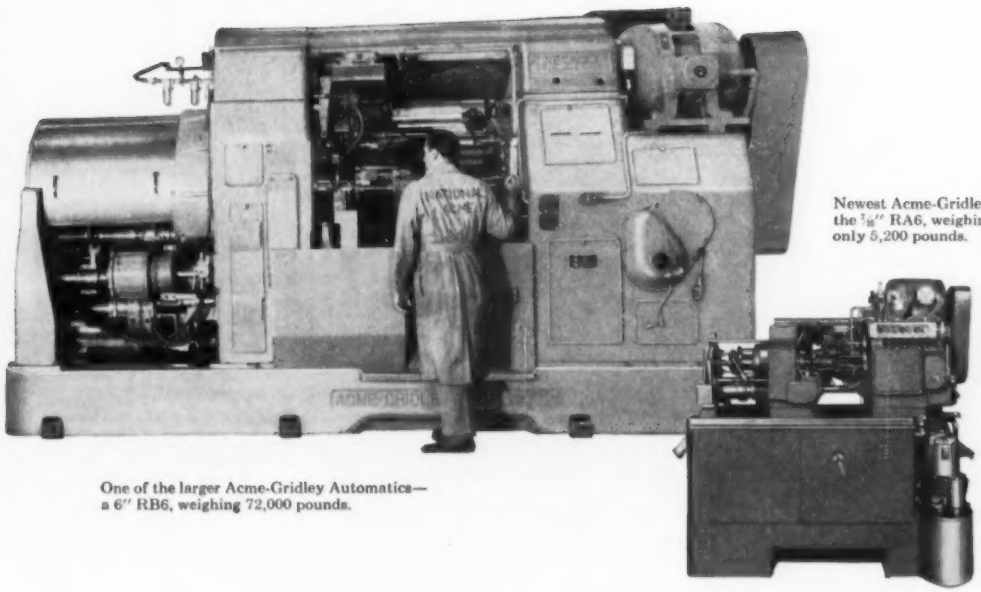
CHARACTERISTIC	QUARTZ LAMP	METAL ROD	QUARTZ TUBE	G-30 CLEAR LAMP
Potential Heat Output	Very High	High	Low to Medium	Low to Medium
Splash Resistance	Very Good	Very Good	Very Good	Low
Impact Resistance	Low	High	Low	Low
Color Sensitivity	Low	Very Low	Very Low	Low
Life Expectancy	Very Good	Very Good	Good	Very Good
Brightness (visible light)	High	Low	Low	Medium
Response (heat up, cool down)	Quick	Slow	Medium Slow	Quick
Cost Factor	see cost factor paragraph above.			

THE FOSTORIA PRESSED STEEL CORP.
FOSTORIA, OHIO

Largest manufacturer of completely engineered infrared ovens and components in U. S. A.

Sections accommodating clear lamps, quartz lamps, quartz tubes or metal rods


Produce parts like these on



Newest Acme-Gridley—the 1/16" RA6, weighing only 5,200 pounds.

One of the larger Acme-Gridley Automatics—a 6" RB6, weighing 72,000 pounds.

ACME-GRIDLEY automatics . . .

FORGET SECONDARY OPERATIONS!

Most parts machined on Acme-Gridleys are *completed* on Acme-Gridleys. Using these Automatics, you eliminate costly rehandling and, in many instances, avoid a sizeable second-machine investment.

The advantage applies to parts weighing fractions of ounces or hundreds of pounds. And the wide-open tooling zone of every Acme-Gridley lends itself to a broad range of installations limited only by the tool engineer's ingenuity. It means that, for sheer capacity range, no line of automatic production equipment in the world equals Acme-Gridley.

If you produce parts like the ones illustrated, then Acme-Gridley Automatics must be in your present plans. Our representative can give you expert assistance without obligation.

National Acme

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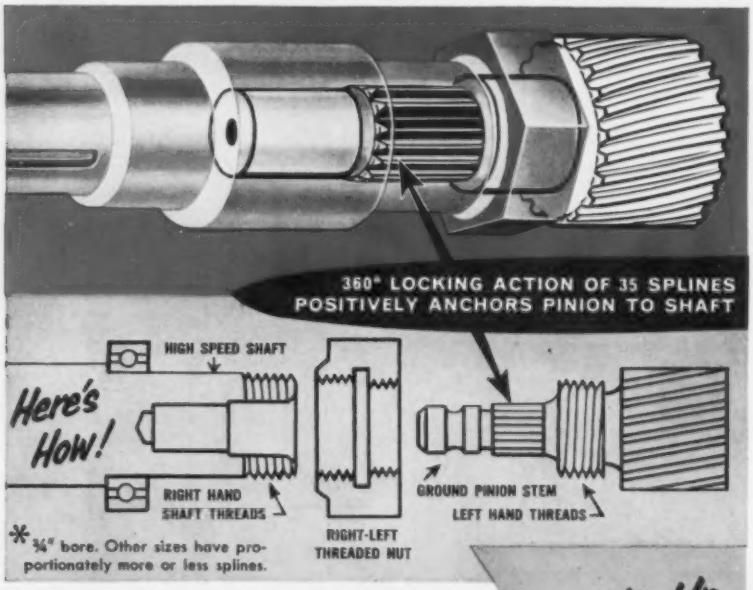
FOOTE BROS. SPLINE DRIVE PINION

Takes 35 "Bites" *

to guarantee better power transmission


360° LOCKING ACTION OF 35 SPLINES POSITIVELY ANCHORS PINION TO SHAFT
HIGH SPEED SHAFT
Here's How!
RIGHT HAND SHAFT THREADS
RIGHT-LEFT THREADED NUT
GROUND PINION STEM LEFT HAND THREADS

* ¾" bore. Other sizes have proportionately more or less splines.

SPLINE DRIVE PINION — advantages:

1. MORE LOCKING AREA

Self-broaching splines provide more internal locking surface than any other pinion ... assure positive anchoring, even under reversing conditions.

2. GREATER STRENGTH

Gear and shank are machined from one piece. Solid construction and spline lock provide greater strength—no weakness due to projecting keyway.

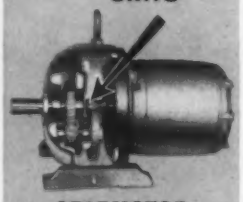
3. PERMANENT, ACCURATE ALIGNMENT

Self-centering action of ground pinion shank in the accurately bored high speed shaft assures accurate assembly and alignment for smoother performance.

4. DUTI-RATED GEARING

Foote Bros. Spline Drive Pinions have the famous Duti-Rated Gear—harder, tougher and more accurate, with greater load carrying capacity for their size than any other gearing.

Standard In GEARMOTORS AND LINE-O-POWER UNITS



GEARMOTOR

LINE-O-POWER UNIT

SPLINE DRIVE PINIONS are another example of Foote Bros. leadership ... another reason you can be sure you're buying the finest when you buy Foote Bros. Power Transmission Equipment.

this trademark stands for the finest industrial gearing made

FOOTE BROS. Duti-Rated LIFETIME GEARING

T. M. REG. U. S. PAT. OFF.

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION

4545 South Western Boulevard Chicago 9, Illinois

Works, The Youngstown Sheet & Tube Co., E. Chicago, Ind.

E. A. Randich, appointed chief mechanical engineer, General Engineering Div., Allegheny Ludlum Steel Corp., Pittsburgh.

W. P. White, Jr., appointed general manager, package engineering, Continental Can Co.

F. W. Schwier, appointed general sales manager, Jackson Div., Aeroquip Corp., Jackson, Mich.

OBITUARIES

H. G. Riter 3rd, 65, honorary chairman of the board, Copperweld Steel Co.

L. M. Nesselbush, president and general manager, Falcon Foundry Co., Lowellville, O.

Dr. S. W. Martin, 47, vice president, Great Lakes Carbon Corp. and general manager, Research and Development Dept.

C. W. Work, 65, sales promotion manager, Instruments and Controls Div., Hagan Chemicals & Controls, Inc., Pittsburgh.

J. J. Delaney, 62, general manager, Reliance Regulator Div., American Meter Co.

J. D. Joyce, sales engineer, Loftus Engineering Corp., Pittsburgh.

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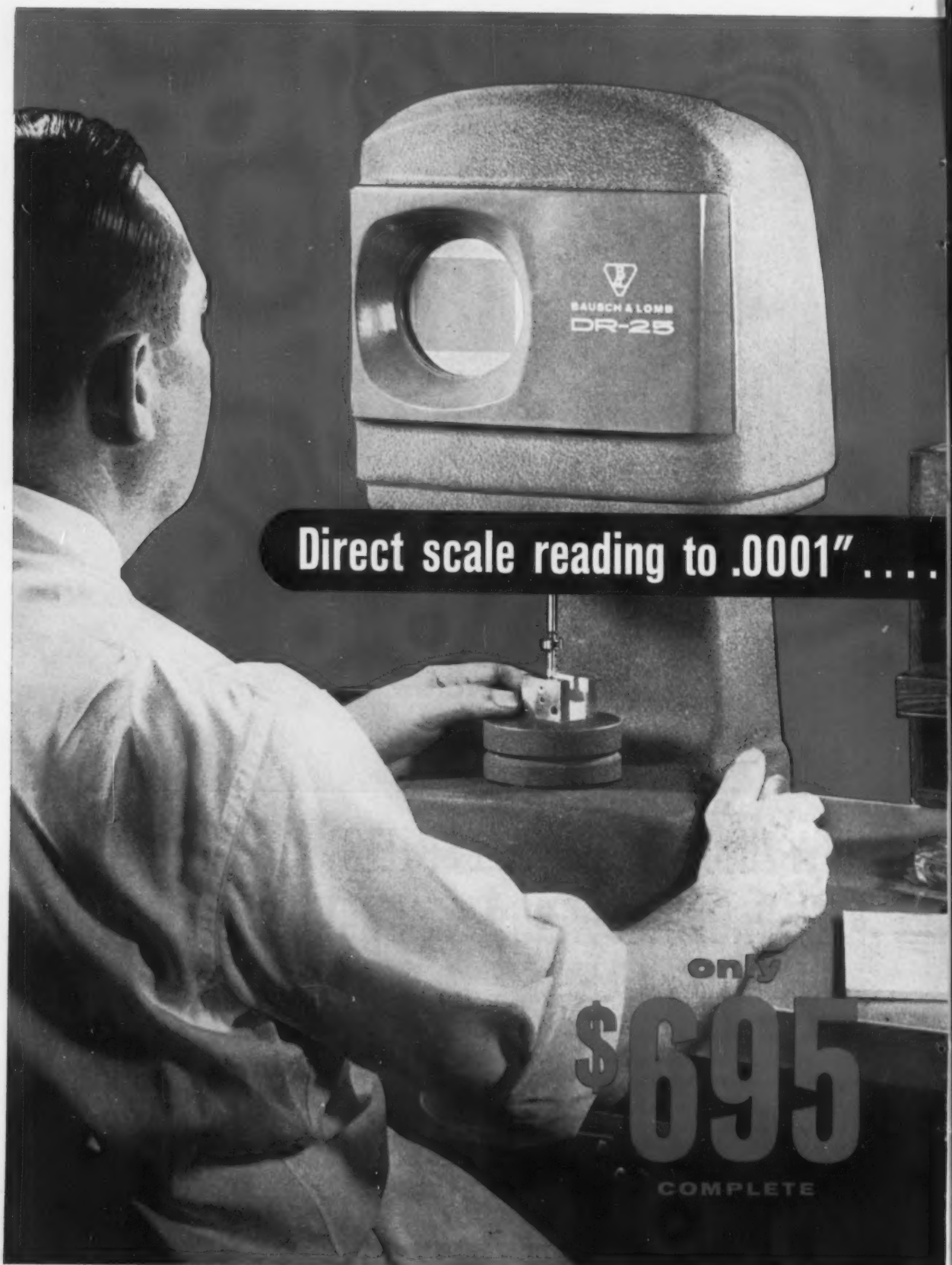
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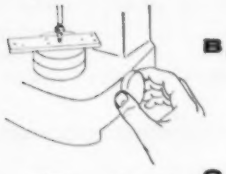
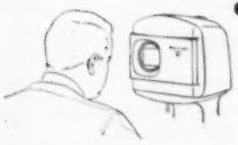


B Turn knob to lower spindle . . . it will stop automatically on contact, with constant spindle pressure.



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Bob showed them a new product that ended rust on work and tools—

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A case story about the Adams Company, Dubuque, Iowa

Before Standard Oil lubrication specialist Bob Wenger told The Adams Company management about Standard's SPECIAL TRANSPARENT COOLANT, there had been considerable trouble with rusting of work and machines in the plant. There had also been trouble with deposits on the ways of the grinding machines. Rust occurring on parts being processed was resulting in damage and even losses. This has been changed.

"Since we changed to your SPECIAL TRANSPARENT COOLANT, we have not had any rusting or deposits on our machine tools, and this product has eliminated the rusting problem on parts being processed through our plant," says Harlow Adams, president of the company.

The Adams Company found they received important additional benefits as well. Operators could now see their work clearly. There was less wheel loading. Because the coolant didn't foam, more of it stayed on the wheel resulting in cooler operation. Faster cuts were obtained with finer wheels. Finer wheels gave better finishes. Periods between dressings were extended. Tolerances were maintained.

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Quick facts about

Special Transparent Coolant

- Clear, transparent fluid.
- Able to control corrosion and rust on work and machines.
- All chemical. Does not support bacteria growth.
- Unaffected by humidity.
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- Fire resistant.
- Odorless.

No rust. Shaft ground with Standard's SPECIAL TRANSPARENT COOLANT shows no rust on inspection by A.T. Murphy, General Superintendent, Harlow Adams, President, and Bob Wenger, Standard Oil lubrication specialist.

You expect more from STANDARD *and get it!*

What Does the Future Hold For Numerical Controls?

By G. S. Knopf—Manager, Industrial Controls Section, Bendix Aviation Corp., Detroit

Now that numerically controlled machine tools are in production, what do users think?

Do the units deliver as promised? Are they hard to use? What savings can you expect?

An expert with an inside view of this new field answers these and other questions.

▪ Today, the aircraft industry is the largest user of numerically controlled machine tools. The main reason: two years ago the Air Materiel Command saw the advantages of this new system for aircraft production. Of about 100 such machines ordered by AMC, some 50 are now in use in aircraft plants.

However, few of these machines are used for non-military items. This may mean that potential users are waiting to see how well numerical control really works.

The answer seems clear enough. Every day, the aircraft industry saves considerable time and money in machining complex parts having pockets, flanges, tapers, contours or grooves. These parts include turbine blades, intricate cams, templates, ribs and dies.

Impressive Savings — For example, in machining a root rib, numerical control saves Northrop Aircraft Co. 57 pct in tooling time and 64 pct in machining time compared to former methods. And in producing a honeycomb die cavity, numerical control (1) brings a 77-pct saving in total tooling and machining time, and (2) cuts lead time from 49 to 3 days.

One of numerical control's most dramatic cost savings occurred when the Lockheed Aircraft plant at Marietta, Ga., machined 600 cams for $35,000 less than previous methods would have cost. Moreover, lead time was cut from 10 weeks to one.

Because they have gained such advantages with numerically con-

FOR TEST RUNS: G. S. Knopf, manager of Industrial Controls Section, outlines features of punched-tape controller in Bendix lab.

IN PRODUCTION: Three-dimensional profile and pocket milling on aircraft bell cranks is automatically controlled by punched tapes.

trolled machine tools, many aircraft firms are investing their own capital in added equipment. One company estimates it will invest about $40 million in the next 10 years to bring 75 pct of its production machining operations under numerical control. And a spokesman for a major machine tool builder flatly predicts that, within five years, 50 pct of all machine tools sold will be so equipped.

Education Important—Education plays a big part in getting the numerical control concept across to industry at large. For even though complex equipment is used, the job of operating it, maintaining it, and programming parts is relatively simple.

Bendix Aviation's Industrial Controls Section has a training program for builders and users of numerically controlled machine tools. In one week, tool engineers learn how to put dimensional data and manufacturing information onto

First Look at New Tape Controlled Profiler

▪ Right now Ex-Cello-O Corp. is grooming its first entry in the tape control race. It's a triple-axis profiling machine, developed primarily for milling and grinding airfoil shapes. This unit, and several others having General Electric magnetic tape controls, are headed for GE's Schenectady works to make steam turbine buckets.

Meanwhile Ex-Cell-O is developing a similar machine for use in its own plant. This one, however uses the Bendix punched tape control system. It will be used to make precision cams and other precision parts for the firm's line of machine tools.

Ex-Cell-O is also well along in its plans to apply numerical control to precision boring machines, template grinders, vertical contouring machines, and gaging. Several machines are on order for both military and non-military production.

Goes All Out — Executive vice president James K. Fulks emphasizes: "We're going all out on numerical control in our field of equipment . . . we do not intend to limit ourselves to one type of machine."

As its design reflects, the basic profiling machine isn't limited to magnetic or punched tape control. It can also take instructions from punched cards. The firm's practical approach is to develop machine tools compatible with any highly accurate numerical control system.

The GE machine will soon be milling and grinding turbine buckets from forged blanks. But for new designs, especially on low-volume items, the profiler offers an interesting option: It will make turbine buckets from square blocks of steel, thus eliminating the high cost and tooling time involved in cavity-die forging.

Uses All Quadrants — What's more, because workpieces are chucked or centered horizontally, the profiler will do 3-D machining in a full circle around them. To make twisted sections, cams, templates, or other airfoil shapes, blanks are simply indexed or revolved as necessary.

The machine has interchangeable heads for grinding and milling. It can also do a variety of other operations, and it can accommodate auxiliary tape controlled devices on separate axes.

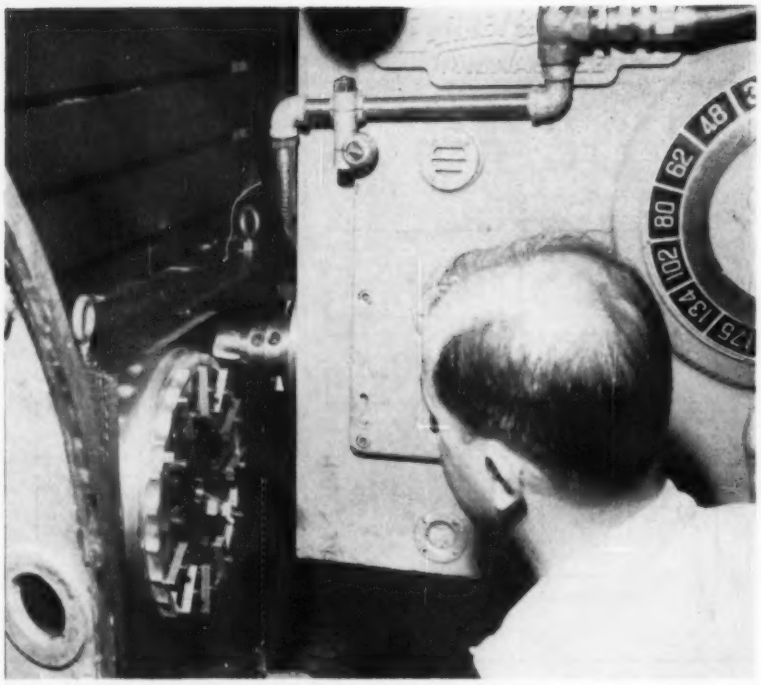
What savings can the user of such a machine expect? With its own new profiler, Ex-Cello-O will make a set of cams for one of its airfoil milling machines in 10 days. The same items formerly took nine weeks.

a process sheet in correct numerical form.

Another important part of the program teaches maintenance men how to keep numerically controlled machines at top efficiency. Because of built-in preventive maintenance devices, this work is now greatly simplified; downtime on numerically controlled tools is comparable with that occurring on conventional machines.

Cost Considerations—For companies who want to use numerical control without investing in programming equipment, there are commercial tape preparation centers offering this service. Many aircraft firms will also prepare tapes for other users.

There are a number of different numerical control systems in use for point-to-point positioning as well as for continuous-contour machining. They vary in cost according to their complexity, and they produce parts of varying degrees

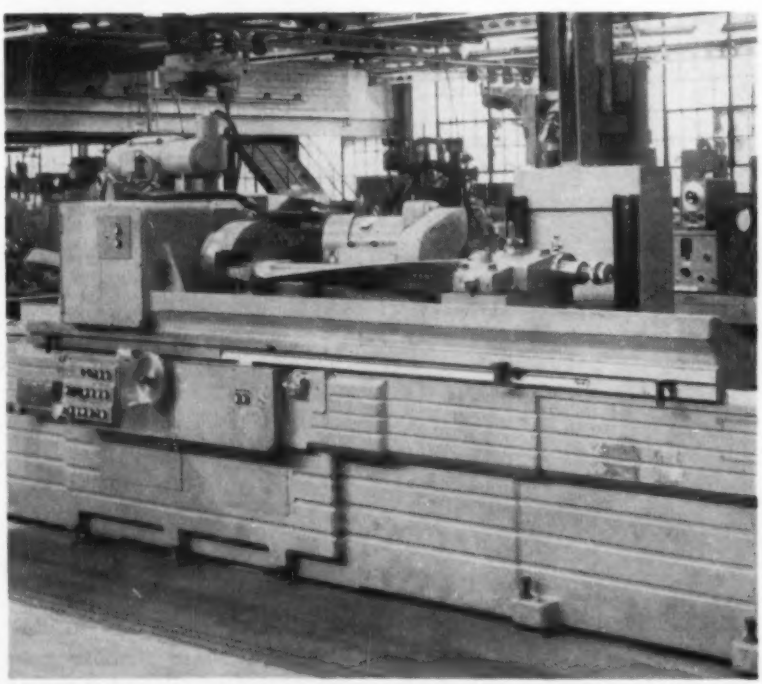


TIME SAVER: Numerical control saves Avco Corp.'s Lycoming Div. 1.5 hours in setup and cutting time on aircraft engine diffuser rings. It's really proving itself by compressing production schedules.

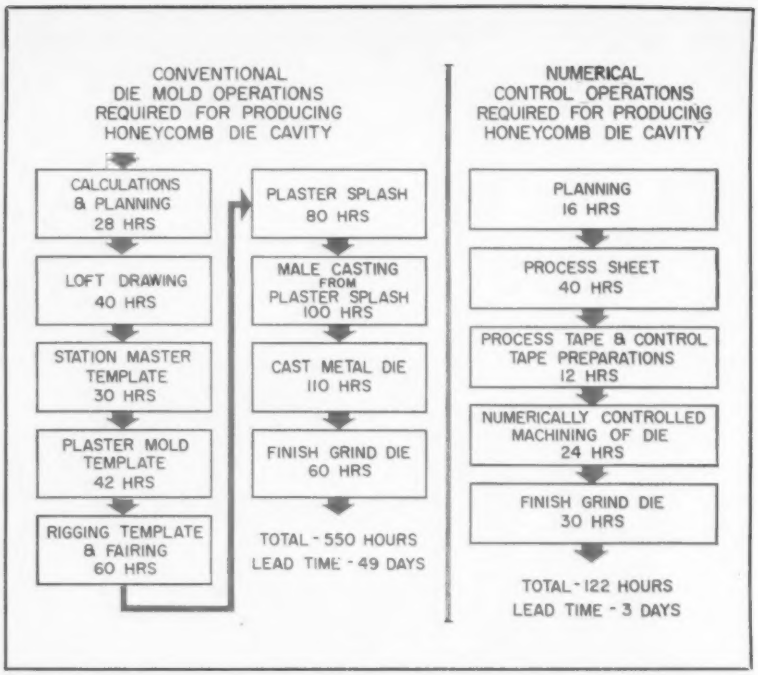
And steam turbine buckets that once took about five months of tooling time can now be set up in a week for tape controlled machining. Complex templates, too, that once took 40 hours or more to machine conventionally, are now made in eight hours.

Two Big Benefits—These facts add up to two significant points for prospective users of such equipment: (1) Lead time can now be bought in far bigger chunks (weeks and months, in many cases) than ever before. (2) Complex shapes which were impractical to machine because of excessive tooling time and cost can now be made with relative ease.

Ex-Cell-O vice president Donald H. McIver, in charge of industrial sales, forecasts: "We believe that within the next five years most of the jobs now done with cams and templates will be performed on tape controlled machines."



WORKS FULL CIRCLE: New profiler holds airfoil section horizontally. Controlled by General Electric magnetic tape system, it has interchangeable milling and grinding heads for machining through 360°.


CONVENTIONAL
DIE MOLD OPERATIONS
REQUIRED FOR PRODUCING
HONEYCOMB DIE CAVITY
CALCULATIONS & PLANNING 28 HRS
LOFT DRAWING 40 HRS
STATION MASTER TEMPLATE 30 HRS
PLASTER MOLD TEMPLATE 42 HRS
RIGGING TEMPLATE & FAIRING 60 HRS
PLASTER SPLASH 80 HRS
MALE CASTING FROM PLASTER SPLASH 100 HRS
CAST METAL DIE 110 HRS
FINISH GRIND DIE 60 HRS
TOTAL - 550 HOURS
LEAD TIME - 49 DAYS
NUMERICAL
CONTROL OPERATIONS
REQUIRED FOR PRODUCING
HONEYCOMB DIE CAVITY
PLANNING 16 HRS
PROCESS SHEET 40 HRS
PROCESS TAPE & CONTROL TAPE PREPARATIONS 12 HRS
NUMERICALLY CONTROLLED MACHINING OF DIE 24 HRS
FINISH GRIND DIE 30 HRS
TOTAL - 122 HOURS
LEAD TIME - 3 DAYS

SIGNIFICANT BENEFITS: Using numerically controlled equipment is obviously a much quicker way to produce a honeycomb die cavity.

of complexity and accuracy. The potential user of any system should choose one that will meet both present and anticipated needs.

Outside the aircraft industry, one of the big question marks about the future use of numerically controlled machine tools centers on their cost. Control makers feel that, when potential users learn to evaluate these systems properly, they'll find them competitive with conventional methods. Conceivably, savings achieved through the use of numerical control can pay for an installation in a few years.

What is Actual Cost?—In comparing the cost of numerical control with that of other machining techniques, all factors should be considered. With a tracer control system, for example, the cost of service equipment, machine tools and labor for designing and making templates should be included as part of the total, just as service and programming equipment are part of the numerical control total.

Based on such overall comparisons, Bendix experience shows that, in many cases, the cost of large tape-controlled machines will be less than that of the same machines with 1:1 tracer control ratios.

One prospect for simplifying numerical control involves standardization of tape format. Builders of machine tools and control systems and users of numerically controlled equipment are cooperating to bring this about. There will probably be at least two standards: one for punched tape and another for magnetic tape systems.

At present, some systems use punched cards to provide either positioning or continuous contouring information. Any of this information can easily be put on rolls of punched tape and vice versa.

A Look Ahead — Many future uses for numerically controlled machine tools will develop as their potential benefits become more widely understood and accepted. For example, numerical control offers definite advantages to the automotive, aircraft engine, machine tool, earth-moving equipment, glass, marine and powdered metal industries.

The immediate prospect for numerical control in the automotive industry appears to be for making tools and dies rather than production parts. It's estimated that a new automobile design may need as many as 50,000 templates. The experience of aircraft firms in cutting template-manufacturing costs and lead times by factors of five indicate that the automotive industry could do the same.

As for the machine tool field, builders are studying how to apply numerical control to obtain the savings previously indicated. This is the case of the machine that makes the machine.

Control Mass Output?—It may not be clear at this time, but the possibility that numerical control can improve high production techniques should not be excluded. In the future, improved equipment could make numerical control more practical than mechanical devices for guiding large-lot production.

This future is not far off. A recent survey by a consulting firm forecasts that 40 to 50 pct of the machine tools sold in the 1960-1963 period will be numerically controlled. Between 1963 and 1965, the survey indicates that 60 to 75 pct of all machine tool builders will use numerical control.

It's unlikely that tape control systems will ever become standard attachments on all machine tools. But jobs for machines so equipped will multiply, and the incentive will not always be purely economic in nature. Such factors as simplified design changes, shorter lead times, less tool-storage space, less operator fatigue, or increased safety may spark many of these new uses.

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Weighing Enters New Fields Via Digital-Data Scales

By G. L. McKenna—Vice President, Toledo Scale Corp., Toledo

Modern scales not only weigh things accurately. They also count, test, and classify a wide range of products.

Moreover, the newest types send and receive data via digital code. They'll control weighing cycles, even print results on your office accounting machines.

▪ Accurate weighing is being tied-in more closely with modern manufacturing and accounting methods. The newest scales, for example, will transmit weight data electronically to a variety of remotely-located business machines: typewriters, tape punches, adding machines, and digital controllers.

Thus, most of the chances for human error in reading, remembering, recording, and transmitting weight data are eliminated. Such information can now be programmed directly, via digital language, into process control, billing, receiving, or stock record routines.

From a management standpoint, these technical gains focus attention on plant-wide weighing as a phase of the overall cost control program. Scales need no longer be viewed as isolated, unrelated units in scattered plant areas.

How can industry use scales equipped with these new remote-recording and automatic control elements? Here's a suggested list of applications outlined by Toledo Scale Div., Toledo Scale Corp:

1. Digital recording of weight data on business machines regardless of their location.

2. Centralized batch control for the process industries.

3. Checking and classifying package and/or part weight automatically.

4. Indicating and recording weights at remote locations via electronic sensing mechanisms instead of conventional lever-and-knife edge mechanical scales.

5. Automatic weighing, price printing and label imprinting on prepackaged products.

6. Automatic filling based on repeated weighings of preset amounts, as required in processing

COUNTING PARTS: With pieces-per-pound and tare data punched on the keyboard, the scale instantly yields a count of the boxed parts.

bulk materials into packages.

7. Weighing materials in motion (as on conveyors) with automatic recording of each unit of weight plus a total reading.

8. Digital indication of quantities of parts where a pieces-per-pound method of counting is used.

9. Testing and classifying products according to their resistance to applied loads.

Batch Control

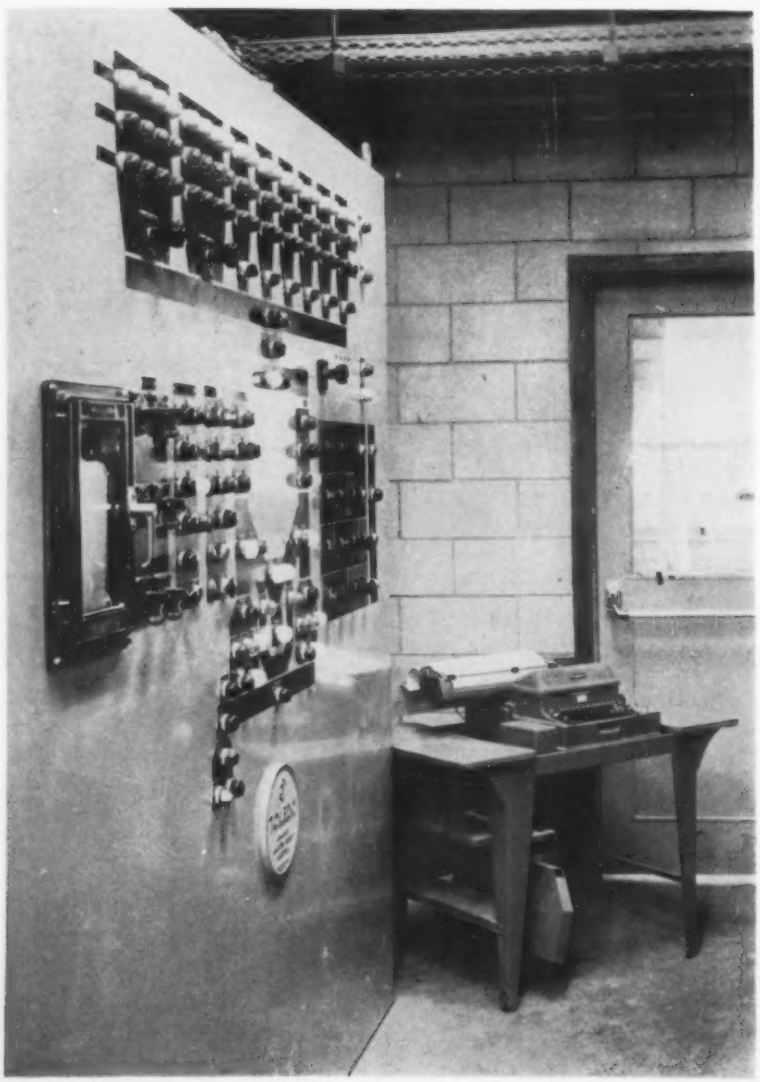
Modern systems feature central control of the complete weighing cycle, including control of feed devices for all ingredients going into each batch. An operator observes progress of the cycle on a control panel and can vary the cut-off weights of various hopper scales at will. As a final control step, the complete batch is also weighed.

For a complete log of each batch and the weight of each ingredient, these systems often have read-out devices that transmit weight data to an electric typewriter or other business machine.

Weighing Moving Items

Despite the fact that items traveling on overhead conveyors tend to sway, electronics makes it possible to (1) record the weight of each item quickly and accurately, (2) produce a total weight figure at any time.

This is done by a digital scanner that "reads" ten separate weights in less than two and a half seconds and feeds them into an electronic decade counter which averages them automatically. The resulting accurate weight then goes automatically into an adding machine. A keyboard permits putting identifying dates and lot numbers into the weight record.



BATCH CONTROL: A central panel interlocks a series of remote hopper scales. Readings are logged automatically on the typewriter.

Bulk Weighing

A good bulk weighing system must avoid cumulative error due to amounts of material remaining in hoppers after they discharge their contents. In a typical case of 50 weighings of 1000 lb each, this error could be substantial.

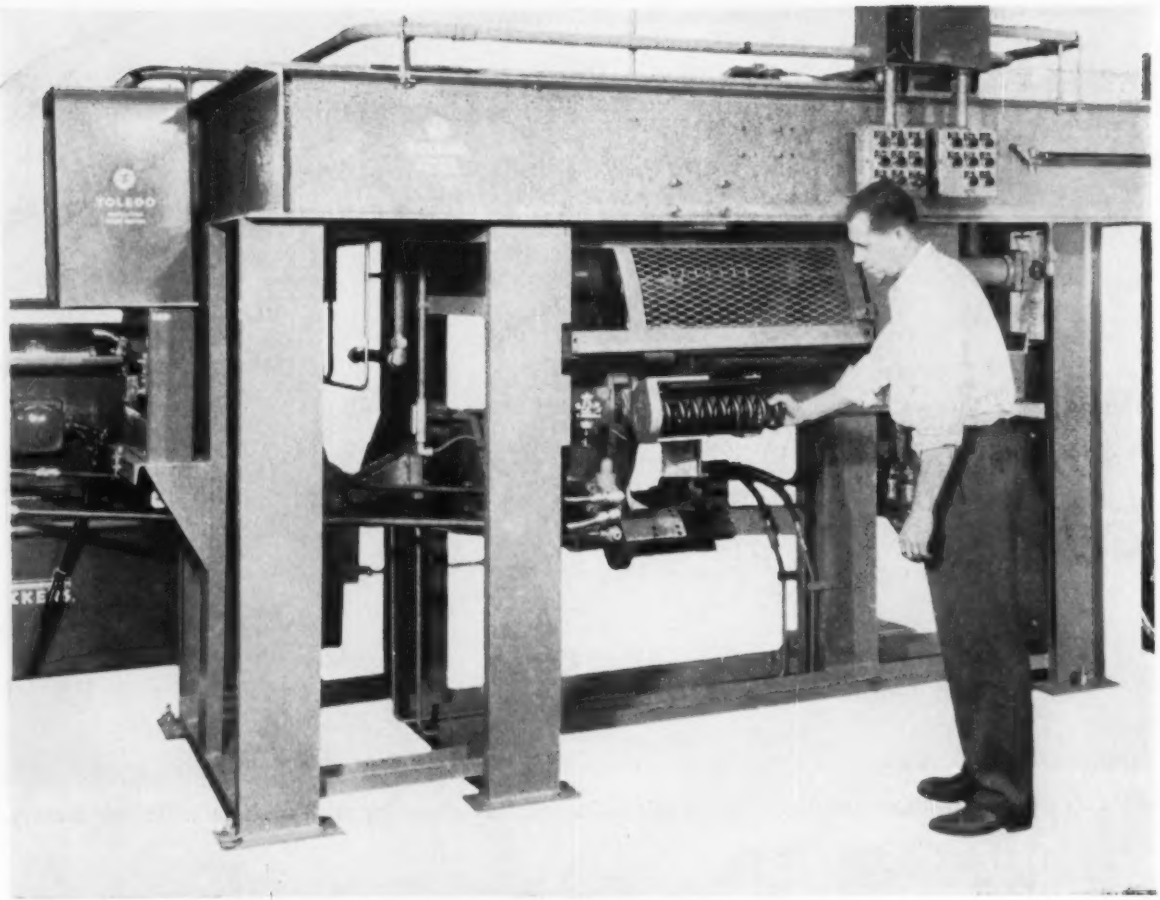
However, modern systems will provide an automatic net weight total for bulk weighings rather than a mere count of the number of hopper loads discharged. This is done by centralized controls that operate the hopper gates. They also cause the scale to transmit the gross weight of each preset hopper load to an electric adding machine.

Next, and particularly important, a second weight is automatically subtracted after the load is discharged. This accounts for any material remaining in the hopper. As a result, the weights accumulated and totaled on the adding machine are net for an accurate billing figure.

Product Testing

One custom-built unit tests and also classifies large coil springs automatically. Its "heart" is a high speed dynamic weigher that senses weight on the initial movement of the scale lever; the lever does not have to come to rest.

The test cycle includes bulldozing each spring and measuring its resistance to compression. This data goes electronically to a color-



TESTING SPRINGS: Custom unit tests coil springs for compression resistance. Test cycle is controlled electronically. An automatic sprayer color codes and classifies each spring with a spot of paint.

coding unit that sprays small dots of paint on each spring. The color of paint classifies each spring within the tolerance range. Unsatisfactory springs are automatically rejected.

Similar in principle is a package or carton classifier that automatically check-weighs packages, passing those that meet predetermined weight standards and rejecting those that do not.

Scales with Memories

Many new weight-printing scales feature a built-in "memory" unit. It will record at the scale or print a weight figure on an office form or ticket at a remote location even after the load is removed. Moreover, another load can be placed on the scale platform without affecting the stored data. This flexibility adds new speed to weighing operations.

By combining this weight printing feature with a ratio-counting scale, one plant finds it possible to produce (1) a printed record of the weight of a quantity of parts, (2) a printed record of the part count in an adjoining column.

Non-Mechanical Weighing

There is still another significant trend in weight control systems which feature remote indication and/or recording of data. It is the use of various types and combinations of weight sensing units in contrast to all-mechanical scales.

For example, furnace-charging cars in steel mills are subject to frequent starts and stops and must be able to withstand unusual load impact. A new type of car-mounted weighing unit, developed to meet these service conditions, consists of: (1) hydraulic load capsules, (2) a knife-edge lever, (3) an electronic load cell, (4) a remote indicating electronic dial and recorder, and (5) a graphic printer.

It has taken time to develop automatic controls and recording devices that will not affect the accuracy of weighing operations. Today, however, there are few practical limitations to the transmission of weight data wherever and in whatever form it is needed.

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READY FOR OVEN: Dextrose binder in core mix will speed baking time for this large core at the Pitz foundry.

Dry Binder Aids Core Baking

Corn sugar in the form of a dry binder is bringing new benefits to coremakers.

Furthermore, the resulting cores are raising casting quality.

▪ A new dextrose core binder is cutting core baking time, speeding shakeout, and improving quality with cores that cost less. Such advantages were reported in a recent survey among several foundries using the corn-sugar binder.

Users report reductions of 30 to 50 pct in core baking time. Operators get more flexibility in scheduling casting output.

Contains Catalyst — The binder contains about 6-pct ammonium sulphate, a catalyst which transforms the corn sugar into a tenacious resinous substance during the bake. Core mixtures need no other baked-strength binder.

In fact, the corn-sugar binder combines with a standard cereal binder to give a combination of desirable properties in a single mix. Called Dexocore, the new binder is put out by the Corn Products Sales Co., New York.

Its use improves the workability of the sand as well as the baked strength of the core. Whether a core is blown or rammed, core density is uniform. Such cores cut down on scrap losses caused by sagging.

Speed Core Baking—One operator who formerly used fast-drying oils, made a 40- to 50-pct cut in baking time by using the dextrose binder. Another, operating a tower oven on a 1-hour cycle, found that cores cured better in one pass than oil cores did in two passes.

Baking at temperatures of 425° to 450°F develops a strong, uniformly bonded core of high scratch hardness. Cores also withstand distortion under the heat and pressure of molten metal.

Core surfaces resist both cracking and metal penetration. As a result, castings come out with smoother interiors. Veining defects may be reduced, decreasing the need for repair grinding or machining.

Interviews with foundrymen brought out comment on the fast shakeout and collapsibility of cores

made with the corn-sugar binder. It's a feature that saves on manpower.

User Reports Safety—The Pitz Foundry, Brooklyn, operates three gas-fired core baking ovens. The units accommodate large cores for machine-tool frames and housings, as well as cores for tanks and other large and small castings.

Pitz formerly prepared their cores with linseed oil-base core oils. Occasional failure of oven temperature controls in past years resulted in several fires in the ovens. After changing to the corn-sugar binder, the firm has had no recurrence even though there has been one temperature control failure during this period.

Baking time has been reduced from 15 hours to 8. In terms of fuel costs alone, the savings are high. Availability of oven time, however, is regarded as the biggest advantage.

Keep Pouring on Time—Ovens are usually charged late in the day. The shorter curing time assures that cores are ready for the foundry at the start of next day's pouring.

Simplicity of handling the dry binder is one of its chief merits. A single trip to binder storage supplies the muller for the day.

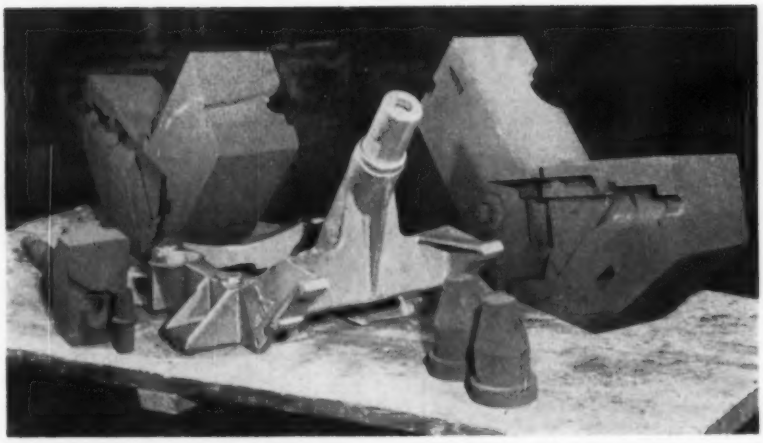
Pitz foundrymen recently used the binder in producing high-quality 8450-lb castings of the upper rails for a milling planer. The part was poured in a pit with bottom, top and sides of the mold made from the core mix. Ordinary sand molds of such size tend to burn out.

Increase Capacity — The Rockford Works, J. I. Case Co., Rockford, Ill., overcame an acute shortage of oven capacity by using the Dexocor binder. Output of this foundry goes into agricultural equipment and tractors, as well as contract work on pumps, valves and the like.

Cores required for these castings are generally large—high-standing cores, thick, bulky cores, and cores with overhangs. When made from oil sands, such cores often called for a full over-night bake.

Today, this foundry obtains a thorough bake of their largest cores in only 3 hours at 475°F. Use of the new binder has resulted in ample oven capacity to turn out the full production on schedule with no need to install additional ovens. Its use permits a 30-pct reduction in the amount of cereal binder used in the mix.

The firm attributes the better stand given by these cores to faster drying. Since water only is added to the dry sand mix, they air dry more rapidly than cores made from oil sands. A crust tends to develop around the core even before baking and brings added advantages in strength and finish.



IMPROVES CASTING: Better quality is result of using cores with dextrose binder to produce steering-column casting for Case tractor.

RESISTS SAGGING: Coreman at Case foundry prepares high-standing cores. Dextrose core binder in mix reduces rejects due to sagging.

Weld Vinyl-Metal Laminates Without Marring Finish

Vinyl-clad metal is easy to cut and form. The problem has been how to join it to other metal parts without ruining the plastic.

Welding engineers have come up with the answer—a way to make thin metal melt on one side and stay relatively cool on the other.

▪ New welding techniques in use at Arvin Industries, Inc., Columbus, Ind., promise to greatly extend the use of vinyl-metal laminates. The new methods permit welding of laminates and other metal pieces of any size, shape and like gage without damaging the vinyl.

Among the items Arvin is making in this way are radio and television cabinets, and cases for movie and slide projectors. The firm also is producing Arvinyl parts for automobile interiors and for various cased products, as well as vinyl-metal sheets for other fabricators.

Special electronic controls and magnetic force welding machines are the key. Treatment of the material to which the vinyl-metal laminate is to be welded also plays a part in the new processes. The result is a projection-type weld that's

DOESN'T AFFECT FILM: Brackets and other parts are welded to vinyl-clad transistor-radio case on a regular production basis at Arvin. Metal is only 20 gage, yet the vinyl remains intact and unmarked.

completed in just one millisecond.

Versatile Material—Arvin makes vinyl-metal laminates by bonding sheets of patterned vinyl to steel, aluminum or magnesium. These laminates then can be handled like the plain metal—die punched, deep drawn, embossed or formed in any other way—without harming the vinyl surface.

Welding was a different story. In normal electrical resistance welding, heat from the weld zone causes the plastic vinyl to melt. This mars the surface and cancels the advantages of coating metal prior to fabrication. Simply stated, it's a problem of getting one side of a 20-gage sheet hot enough to melt, while keeping the other side below the temperature of boiling water.

As the first step in developing a non-marring system, Arvin had Robotron Corp., Detroit, design controls that would regulate a cycle lasting only a few microseconds.

Joint Effort—Meanwhile, engineers from Arvin and Precision Welder & Flexopress Corp., Cincinnati, experimented with various welding methods. They finally decided that magnetic force projection welding offered the most hope for uniform, high-strength welds.

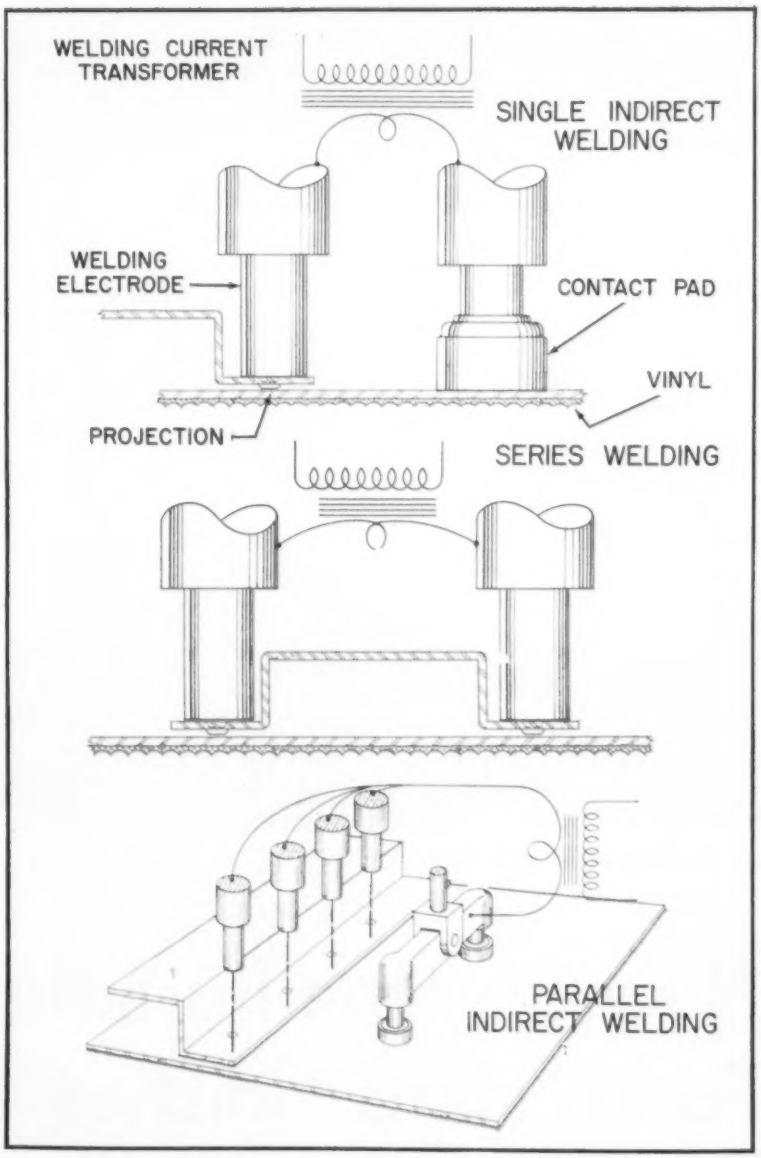
This is done by series welding and indirect welding. One side of circuit is carried into the back side of the vinyl coated steel while the other electrode is in direct contact with the uncoated sheet on the side opposite the projection.

Several types of projections were tested before one with a concave tip was chosen. Projections concentrate the heat. In addition, very short welding times and accurate control of pressure are vital. Magnetic force fits in perfectly. The force is present when the current is flowing and can be timed just as accurately. Also the impact blow of the magnetic force brings the parts together during the short welding time.

Many Variables—This method of welding seems suitable for use with all types of vinyls—laminated sheet as well as paste coated or liquid vinyl applied over a compounded adhesive. Critical factors, however, are vinyl thickness, steel thickness, combination of materials to be welded and part geometry.

Welds of good shear strength (750 lb in 20-gage) are consistently obtained. But there must be good quality control of the parts involved. The projection shape and height are important. The fit of parts being assembled must be good enough to insure against current leakage. The power supply to the welding machine should be good, with voltage variation at a minimum.

Welds have been made using galvanized sheets assembled to vinyl coated sheets. Projections may be put in the vinyl coated sheets with the vinyl brushed off the projection to permit welding to an uncoated sheet. Also the pressure can be applied to the projection through the vinyl coating with current applied away from the weld.



THREE WAYS: Arvin uses single indirect magnetic force projection welding. Two other methods are possible on vinyl-metal laminates.

AUTO DIP TANK: Entire under body of Lincoln is dip-coated in one pass through a 10,000-gal tank of paint.

New Styrene-Butadiene Latex Forms Hard Finishes

Water-base paints have become a common household item.

Rubber - containing finishes have also been used to protect plant and equipment.

Here's one that combines the attributes of each.

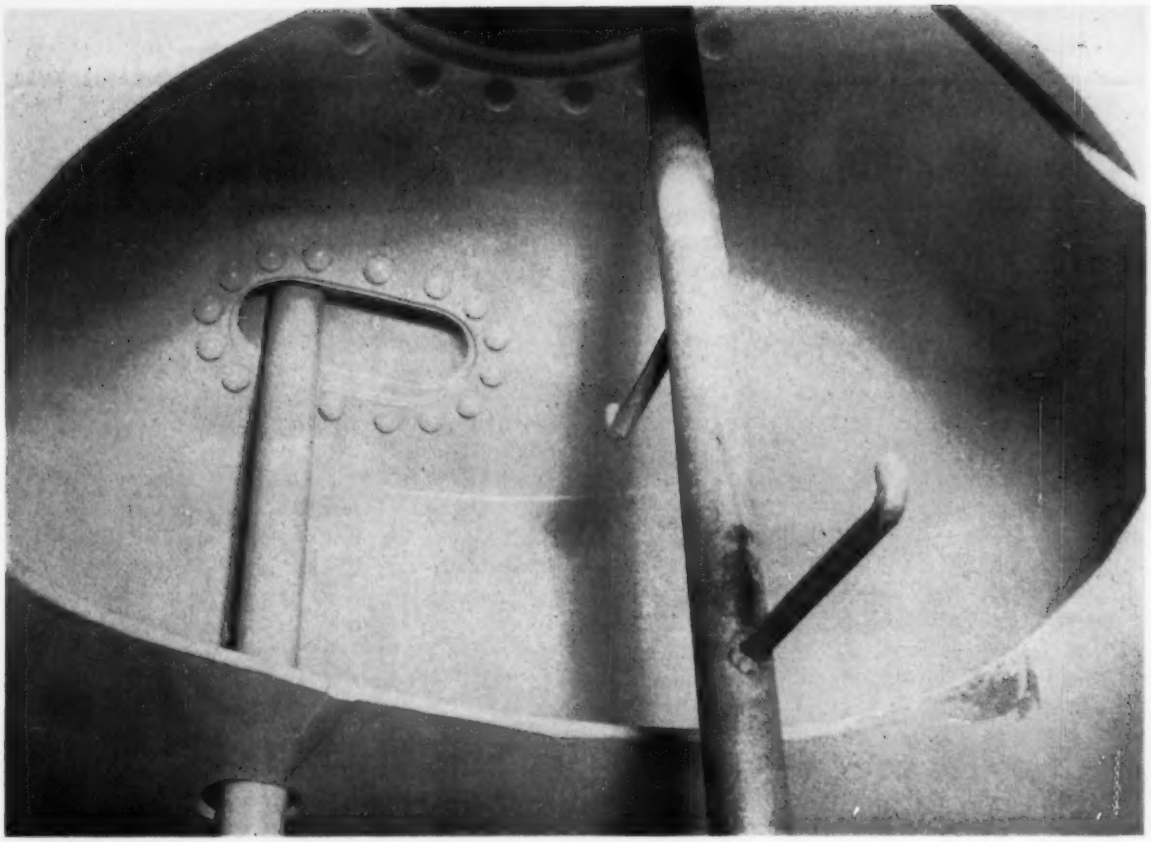
By **M. C. Carpenter** and **A. L. Cipriano**—Coatings Technical Service, The Dow Chemical Co., Midland, Mich.

▪ One of the latest and more potent weapons for industry's war on corrosion is a paint base called Dow Latex 566. Specially designed as a binder for industrial paints, the new styrene-butadiene paint latex can be compounded into a variety of easily applied water-base finishes for metal substrates.

Being a water dispersion, it does away with dangers of solvent fires, toxicity problems, and the cost of special equipment (and insurance) to cope with them. At the same time, it forms a hard, tightly bonded finish that's suitable for countless uses, both indoors and out.

In laboratory tests and field exposures Dow Latex 566 primers compare very well with accepted automotive primer systems. The latex paints show improved adhesion and reduced creep when compared to epoxy primers; they are equivalent to or better than commercial alkyd primers for adhesion, creep, and salt spray resistance. Rusting hasn't been a problem.

Broad Property Range—Gener-



RUGGED SERVICE: Styrene-butadiene paint on inside of tank car withstands hot concentrated caustic solution.

ally, the latex paint films may be described as having excellent salt spray resistance, excellent resistance to 5 pct NaOH immersion, and excellent resistance to 5 pct acetic acid. They also have good hardness, good mineral spirits resistance, adequate impact resistance, good flex (pigmented films), and good resistance to water immersion.

In addition to ease of formulation and application (spray or dip), the industrial latex paints eliminate costly thinner losses and minimize smog problems. No thinner losses can mean greatly decreased raw material costs. For example, the 8 million gallons of thinners and reducers used by Fisher Body in a single year would be unnecessary if a latex paint were used.

Regarding smog, paint is a major source of air pollution. As an example, a report published by Los Angeles County Air Pollution Control District says paint users and manufacturers are responsible for the lion's share of the 400 tons per day of organic solvents exhausted into the air above Los Angeles County. Latex paints can be a simple and inexpensive solution.

Where to Use Them—The styrene-butadiene latex paints are expected to find wide use as primers for automotive parts and bodies, metal furniture, electrical equipment such as motors and transformers, and for refrigerators, air conditioners, and other household machines. Gloss and semi-gloss industrial latex paints are suggested for decorative as well as protective finishes on metal furniture, motors, drums, auto interiors, and small parts.

Some of the first commercial uses of these paints indicate the extent and range of their application possibilities. Many tank car interiors have already been protected with a styrene - butadiene latex industrial paint. The finish, subjected to hot concentrated caustic soda for several years, is still in excellent condition.

A prominent mattress manufacturer dips the springs of his quality mattresses into a paint made with styrene-butadiene latex. This makes them silent and longer-lasting.

One of the more dramatic examples to date is the fact that Lincoln automobile bodies are dipped into a 10,000-gal tank of industrial paint made with a Dow styrene-butadiene latex. This puts a sturdy, resistant film of latex paint over the entire underbody of the vehicle.

Dow Chemical Co. doesn't make the actual paints. It supplies Dow Latex 566 to paint manufacturers, who in turn compound the material into many types of finishes.

Valves Meet Power Demand

As engine performance improves, materials have to keep pace with severe conditions.

In the case of valves, the problem is resistance to high temperatures and corrosion.

Combined research comes up with a special alloy for the job.

▪ Valves that were quite adequate 15 years ago wouldn't last long in today's 200-400-hp engines. Areas of the head section in contact with burning fuel reach 1300-1400°F in automobile engines and up to 1600°F in truck engines.

In 1945, engineers at Thompson Products, Inc., Cleveland, foresaw this post-war trend. Besides withstanding higher temperatures, exhaust valves would have to withstand the corrosive effects of higher octane fuels and would need good strength at room temperatures.

Solve by Teamwork — With the problem clearly defined, Thompson Products joined with Armco Steel Corp., Middletown, O., to develop a new stainless valve material. An austenitic chromium-nickel-manganese stainless steel gave promising results in the laboratory, being especially resistant to attack from additives used in gasolines and oils.

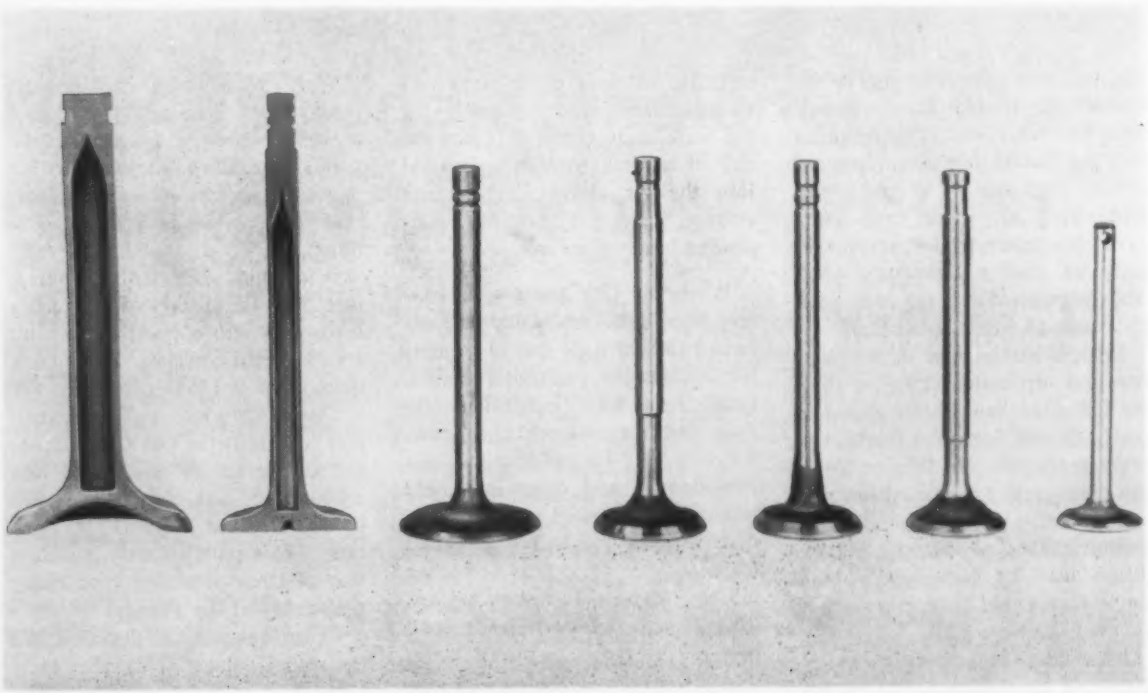
Dynamometer and road tests turned up one weakness: While it demonstrated corrosion resistance, it fell short on hot-hardness needed in the head section of the valve.

It was a problem of how to increase high-temperature properties without lessening corrosion resistance.

This was solved by adding nitrogen until it reached 0.5 pct. After minor changes were made to maintain a balanced analysis, the resulting product was named Armco 21-4 N stainless steel, with a hardness of 190 Bhn at 1400°F.

Combination for Job—Its creep resistance, stress-rupture properties, as well as room and elevated temperature fatigue strength, are more than present-day valves require. It has good tip hardness and adequate resistance to seizing. And all these properties are maintained over the life of the valve.

As for freedom from porosity due to increased nitrogen content, the development brought out proof that manganese coupled with a substantial carbon content greatly increases the tolerance for nitrogen at solidification. This permits the use of high nitrogen contents with the resulting benefits in mechanical properties.



ALLOY STANDS TEST: What these valves have in common is that they are made of 21-4 N stainless steel. The special alloy withstands the high temperatures and corrosion of high-compression engines.

Crawford Door Company uses J&L superior quality, oil-tempered spring wire in 18 sizes for torsion and extension springs. Springs range from a few feet long to giants over 12 feet long, capable of raising 3,500-pound industrial doors without effort.

"UNIFORM HEAT TREATING AND TEMPERING PAYS OFF IN SUPERIOR J&L SPRING WIRE"

...says Crawford Door Co. official

"J&L has a superior spring wire because of the control they are able to maintain in their heat treating and tempering operations," reports Mr. Jerome Fansler, vice-president of the Crawford Door Company, Detroit, Michigan.

"J&L spring wire is properly tempered. This means the wire will coil uniformly. There are no surface imperfections or potential breaking points."

Crawford Door uses J&L oil-tempered medium basic spring wire for torsion and extension springs. They buy 18 sizes, ranging from .192 (13/64") to .293 (19/64").

Every coil of J&L spring wire is thoroughly tested for uniformity of physical and dimensional properties. This uniformity can speed your production, reduce the number of rejects. J&L has complete control of wire quality from ore through finished product. When you specify J&L, you are sure of wire that is tops in quality yet competitive in price.

Next time you buy wire, call in your J&L representative for fast, satisfying service. Or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

Can a Motor Run Forever?

Electric motor researchers know minimum life of silicone insulation. Maximum life may never be known, though.

After 72,000 hrs, the test motor still runs. In theory, at least, it may run forever.

▪ How long should a motor last? The answer to this depends on its job, environment and material makeup.

After 72,192 hours, a much-abused motor under test by Dow Corning Corp. and Westinghouse Electric Corp. is still running. In theory, it could go on forever. If it does, it's testers will never attain one of their objectives: determining the maximum life of silicone insulation in motors.

Another objective, minimum life, was settled some time ago. High test temperatures either oxidized copper components or warped the rotor, causing motor failure while insulation was still effective. At the recent Design Engineering Show in Chicago, an exhibit displayed a 5-hp motor which ran over 60,000 hours at 464°F. Testers figure this as equivalent to more than 5500 years of regular service.

Began Years Ago—The program began in Oct. 1943 with eight motors: 10-hp, 1190-rpm, 3-phase induction units, fitted with special end-bells and asbestos shields to isolate the bearings.

Six units were insulated with silicone bonded and impregnated materials.

All eight motors were generator-loaded to produce average copper temperatures ranging from 392 to 590°F. Operating time at temperature was divided into heats, each a 25th of the motor's estimated maximum life. Heats alternated with 24-hour conditioning periods at 100 pct relative humidity.

Bad Guessers — Testers anticipated research would run about a year. Two units not using silicone insulation did fail and caught fire just about as expected. Silicone insulated motors showed an abrupt drop in wet insulation resistance at predicted times.

After 60,000 hours, silicone varnish looks much like glass.

Contrary to expectations, the

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July 15, 1958

drop wasn't followed shortly by total insulation failure. Instead, the motors kept on. The 590°F motor, for example, was expected to fail within a week or so. It lasted over seven months. Another broke down after a year due to copper oxidation.

Withstand Heat — After 60,173 hours at 464°F, one of the last two failed. It ran the equivalent of 360 years at standard Class H hottest-spot (356°F) temperature, or 5787 years at conventional Class A (220°F) limits.

It's doubtful, of course, that any motor could operate 5000 years, if only for physical reasons not related to insulation.

Welding

Turnpike builders weld still another bridge

The latest Connecticut Turnpike bridge, crossing the Norwalk River at Norwalk, Conn., is all-welded. Its seven spans make a total length of 910 ft. The Turnpike has 28 all-welded bridges, the largest of which is a 24-span, 2661-ft bridge at Greenwich. The state's history of welded construction dates back over 20 years.

Lincoln Electric Co., Cleveland, is currently sponsoring a series of seminars on the application of welding to bridge design. These have been attended by over 250 engineers from all parts of the country. Many of these engineers, Lincoln reports, have indicated that the major portion of plate girder bridges now on their drawing boards for the new highway program are designed for welding.

Many welded bridges, like this one, are on drawing boards.

Chem Milling

Basket resists acid in chemical milling

Special baskets which carry parts into a chemical milling tank at North American Aviation Co., Downey, Calif., withstand repeated immersions in strong etchant acids. Made of Haynes Alloy No. 25, the baskets, when immersed, usually contain either stainless steel or titanium parts. The baskets have served for over two years. Formerly used baskets required re-coating each month.

Haynes No. 25 is a cobalt-base alloy supplied by Haynes Stellite Co.

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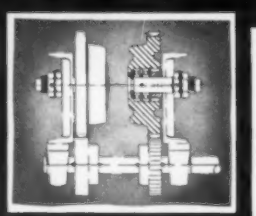

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FORGED ALLOY STEEL WHEELS, GEARS and PINIONS

Only Abell-Howe offers you forged steel dependability at all critical points of wear —wheels, gears *and* pinions! Furthermore, Abell-Howe rugged outrigger construction keeps bridge in square—provides lateral bracing for bridge girder. Smooth fluid drive provides cushioned starts whatever the load—reduces reversing shocks. To further assure smooth operation and lasting service, anti-friction bearings used throughout—with double row ball bearings in end truck wheels. Here's crane value that can't be beat!

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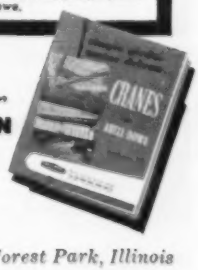
Combine positive wheel mounting with immediate removability. To remove axle, simply loosen two nuts, twist axle 90° and pull it out. Wheels, too, are as easily removed with no dismantling of truck frame. "QUICKLOCK" is exclusive with Abell-Howe.



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Gets into
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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 99.

Nylon Bearings

Bearing applications for fluidized nylon coatings are featured in a company's publication. (American Agile Corp.)

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Pipe Specifications

Rigid plastic pipe encased in a steel jacket is described in a 4-page pamphlet. This pipe combines pressure-retaining strength of steel pipe with chemical resisting qualities of unplasticized polyvinyl chloride pipe. (Jones & Laughlin Steel Corp.)

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Tractor Shovel

Design, engineering and operating features of a tractor shovel appear in an 8-page catalog. (Allis-Chalmers Mfg. Co.)

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Work Holding

Collet index fixtures for tool room and production work are featured in a bulletin. These fixtures hold work accurately and provide rapid and economical indexing. They are designed for direct application or use with a sub-base on milling machines, grinders, shapers, and drill presses. (Hardinge Brothers, Inc.)

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Stainless, Alloys

A 40-page booklet discusses investment-cast properties of 8 stainless and 4 low-alloy steels. Stainless steels include types 310, 316, 347, 410, 431 low-carbon, 431 high-carbon, and 440C. Low alloy steels cover 4130, 4140, 6150, and Haynes 1000 steel. (Haynes Stellite Co.)

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Liquid, Gas Units

Rectification plants for producing oxygen and/or nitrogen in liquid or gaseous form are described in a catalog. Station pumps with vaporizers and storage and converter tanks for liquid oxygen, hydrogen and argon are also covered. (Superior Air Products Co.)

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Pipe Bending

Special fabricating, and bending and coiling of pipe and tubing facilities are presented in an 8-page catalog. (Swan Engineering Co.)

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Design Sample

A new design service teams-up a 12-page bulletin with an actual production sample. Manufacture of this

sample incorporates many conditions common to parts fabrication. It's produced by short-run methods using temporary tools. The bulletin schematically describes conditions embodied in the sample. What both sample and literature do is show one distributor's facilities for making small-lot stamping runs to customer requirements. (For free copy write on company letterhead to Dayton Rogers Mfg. Co., 2826 13th Ave., S., Minneapolis, Minn.)

Fabricating

Two recently issued bulletins cover: (1) fabricated piping and piling in steel, wrought iron and alloy plate; (2) industrial heating equipment, nuclear reactor and supersonic wind tunnel equipment, air and pebble heaters. (Posey Iron Works)

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Bending Rolls

Initial, pinch-type all steel power rolls are featured in a 16-page catalog. Also covered are hard operated rolls. (Wysong & Miles Co.)

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Vibration

Vibration monitoring is discussed in a 4-page folder. (Consolidated Electrodynamics Corp.)

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Catalysts, Chemicals

A company and its products are reviewed in a 20-page publication. (Catalysts & Chemicals, Inc.)

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Slitting Lines

"Multiple Rotary Slitting Lines" offers basic information on slitters and allied equipment. First section of the 76-page handbook covers design, selection and operation of slitters and slitting lines. Time studies, analysis of operating cycles, methods of coil handling, scrap disposal and other operating data are included. Second part contains specifications, capacity tables

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This implement coupler now looks better as a standard malleable casting, and is produced at much lower cost. It was formerly an assembly of 4 pieces entailing 7 costly operations.

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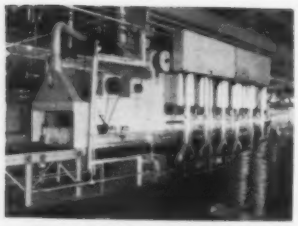
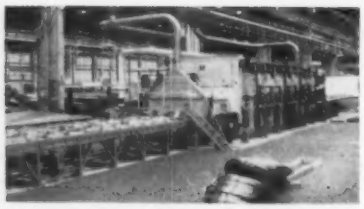


Another EF multi-purpose gas fired radiant tube, forced circulation roller hearth furnace used for bright finish annealing coils or straight lengths of copper tubing; also coils of thin gauge copper strip.



EF direct gas fired forced circulation roller hearth furnace for process and finish annealing copper and copper alloy tubing and rod in coils and straight lengths — also handles coils of wire.

This EF twin-chamber multi-purpose direct gas fired roller hearth forced circulation furnace uniformly anneals coils of copper or brass strip—operates either intermittently or continuously.

THE ELECTRIC FURNACE CO. Salem Ohio
EF
Gas Fired, Oil Fired and Electric Furnaces.

congratulates

AMERICAN BRASS

on opening new plant in

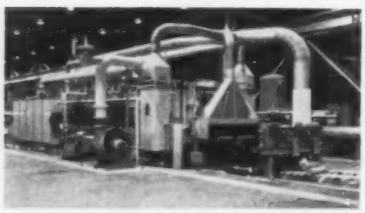
LOS ANGELES

The new plant of The American Brass Co. at Los Angeles—the West Coast's newest and largest brass mill—incorporates only the most modern methods and plant equipment for producing copper and brass strip, tubing, rod and other forms of brass copper and copper alloy mill products.

This progressive step in the Company's extensive and continuous modernization program, and the strategic location of this new plant, makes possible the economical production of large quantities of copper and brass products of the highest quality, standards of precision, and uniformity, and provides the means for rendering even better service to their customers in that area.

Long experience and the high standards of EF design contributed to the selection of The Electric Furnace Co. as the designers and builders of the furnaces required for this modern plant.

Submit your production furnace problems to experienced EF engineers—it pays.



An EF direct gas fired, 2 row, chain strand conveyor furnace for heating copper alloy billets for extrusion.

This EF direct gas fired, 2 row, screw conveyor furnace heats copper and copper alloy billets for piercing.

EF

BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

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FREE LITERATURE

and additional data on slitters, uncoilers, recoilers, coil cars and scrap choppers. (The Yoder Co.)

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Meter Mount

A 4-page bulletin describes a low-cost, bonded rubber meter mounting. It protects sensitive instruments against shock and vibration. (Lord Mfg. Co.)

For free copy circle No. 13 on postcard, p. 99

Plastic-Steel Pipe

Plastic-coated steel pipe and tubing illustrated in a bulletin has a yellow coating for high heat reflectivity. The 4-page folder describes problems of pipeline corrosion, and shows how strength of steel and protection of plastic combine to meet requirements of severe corrosive applications. (Republic Steel Corp.)

For free copy circle No. 14 on postcard, p. 99

Nuclear Controls

Control-rod drive mechanisms for nuclear power reactors are featured in a 12-page piece of literature. (ALCO Products, Inc.)

For free copy circle No. 15 on postcard, p. 99

Polyester Film

Application ideas for "Scotchpak" heat sealable polyester films are featured in a brochure. (Minnesota Mining and Mfg. Co.)

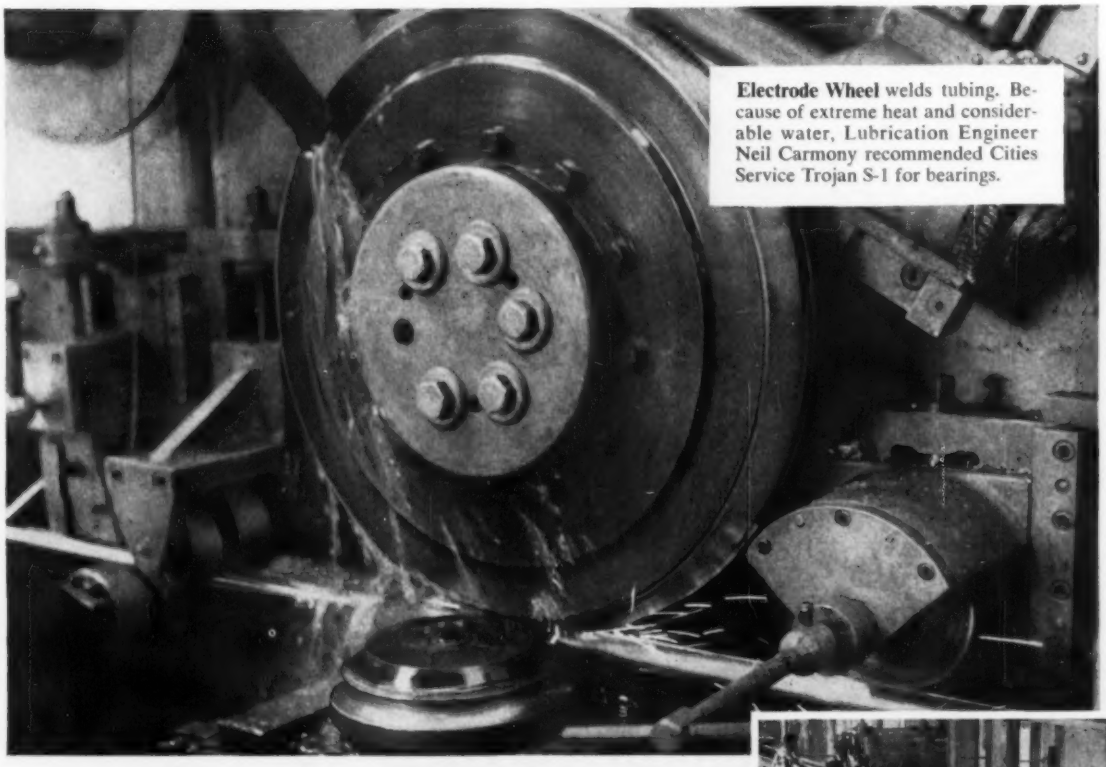
For free copy circle No. 16 on postcard, p. 99

Coil Stock

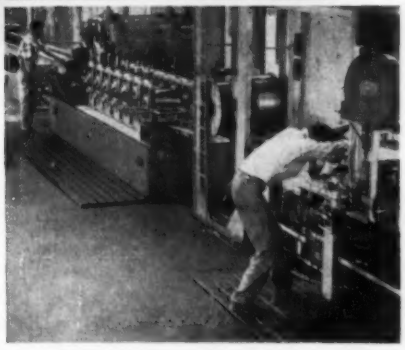
What are the most desirable coil weights to be specified in ordering for work ahead, considering coil handling equipment available as well as work to be done? The correct answer to this can be provided by a new coil weight and length calculator. ID and OD of the coil, width and thickness of the stock are all the user needs to know to operate the calculator. (F. J. Littell Machine Co.)

For free copy circle No. 17 on postcard, p. 99

New Tubing Mill Produces at Speed of 350 Feet Per Minute!



Electrode Wheel welds tubing. Because of extreme heat and considerable water, Lubrication Engineer Neil Carmony recommended Cities Service Trojan S-1 for bearings.



It's Cities Service for Hydraulic System and all lubrication

On January 1, 1957, P&H Tube Corporation put a new mill in production at Bossier City, Louisiana—the only one of its kind in the United States.

Equipped with special drives and worm gears, this unique mill actually produces at the rate of 350 feet per minute—twice the speed of conventional tubing mills!

With speeds like this, you might expect lubrication troubles . . . but P&H Tube Corporation has none. One big reason is the careful study of each machine made by Cities Service Lubrication Engineer Neil Carmony—and the lubrication recommendations he made.

In hydraulic units, for example, Carmony recommended Pacemaker 200-T Hydraulic Oil . . . for he knew its ability to withstand the severest operating temperatures and speeds. He knew that due to its exceptionally high viscosity index and superior compounding, Pacemaker 200-T would give maximum resistance to thinning, oxidation, rust and corrosion.

The wisdom of this decision, as well as the choice of other lubricants shown in the chart at right, was demonstrated recently when P&H Tube Corporation ran off 125,000 feet of tubing in an ordinary eight hour shift—with normal time-out for change-overs!

That's production with a capital P! And if you'd like to improve your production picture, a Cities Service Lubrication Engineer can help you, too. Call the nearest office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

What the Cities Service Lubrication Engineer Recommended

Hydraulic units	Pacemaker 200-T
Bearings	Trojan H-2 Grease
Drive units	Pacemaker Oils
Bearings by the mill's electrodes	Trojan S-1

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

OSTUCO SWAGED TUBING

ups aircraft parts production 82%

Hogged out of a shaped forging, this vital aircraft part in SAE 4140 took 400 minutes to machine.

So the producers, The "Special" Corporation, brought their problem to Ohio Seamless. The solution—an Ostuco Swaged Tube.

Now the chips are down . . . and so is machining time. Down to 220 minutes—*a saving of 180 minutes per part*—with a whopping 82% increase in parts production per workshift.

Chances are Ostuco Tubing can put *you* on velvet, too. The first step is to contact your nearest Ohio Seamless sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-8112

Photo: Courtesy The "Special" Corporation, Brooklyn, N. Y.

FIFTY YEARS
OSTUCO
OSTUCO TUBING
1908 1958

OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Moline, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Richmond, Rochester, St. Louis, St. Paul, St. Petersburg, Salt Lake City, Seattle, Tulsa, Wichita. CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York.

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Electric Hoists

Electric hoists reviewed in an 8-page bulletin have capacities of 500 to 4000 lb. These hoists employ a novel solenoid motor brake. (Wright Hoist Div., American Chain & Cable Co.)

For free copy circle No. 18 on postcard

Hardened Blades

How well a cutting edge performs depends on its ability to resist wear, bending and breakage. An 8-page booklet points up features of recently developed hardened parts for scrapers and bulldozers. (Caterpillar Tractor Co.)

For free copy circle No. 19 on postcard

Miniature Bearings

Precision miniature ball bearings are covered in a 6-page catalog supplement. (The Barden Corp.)

For free copy circle No. 20 on postcard

Fasteners, Rods, Bolts

Listed in a new catalog are threaded fasteners, rods and stud bolts in nearly 10,000 sizes, diameters and lengths in the most commonly used metals. (R. E. C. Corp.)

For free copy circle No. 21 on postcard

Beryllium Safety

Industrial hygiene aspects of beryllium metal, oxide, alloys and other beryllium products are discussed in a 12-page booklet. It faces the fact that during extraction and fabrication, some forms of beryllium, when improperly handled constitute a health hazard. This hazard needn't be viewed with alarm, it says, if full advantage is taken of past experience and indicated safety and hygiene measures. (Beryllium Corp.)

For free copy circle No. 22 on postcard

Beryllium Metal

Facts about beryllium are related in a 24-page booklet. Illustrated with graphs and charts, it gives up-to-date facts on beryllium properties. Designed to dispel mysteries and misconceptions about this metal, it shows beryllium has promise where light weight and high strength are important. (Brush Beryllium Co.)

For free copy circle No. 23 on postcard

Annealing Furnaces

Comparison of gas and electric strand annealing furnaces is made in an 8-page bulletin. It compares costs, efficiencies and heat losses of the two types of furnaces used to strand anneal wire continuously. (General Electric Co.)

For free copy circle No. 24 on postcard

Machinery

Equipment for rolling ferrous and nonferrous materials is shown in a 1958 machinery catalog. Also covered are: straighteners, tube mill equipment, wire machinery. (H. J. Ruesch Machine Co.)

For free copy circle No. 25 on postcard

Magnets

Permanent magnets, magnetizers, and demagnetizers are covered in a new catalog. It lists over 70 cast Alnico V magnets and over 30 sintered Alnico II magnets. (Indiana Steel Products Co.)

For free copy circle No. 26 on postcard

Machine Tools

"Light - heavyweight" machine tools are outlined in a bulletin. These combine advantages of machine tools—rugged construction, precision accuracy, high production

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **7/24/58**

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FREE LITERATURE

— and power tools — low cost, simplicity of set-up and operation, versatility and portability. (Walker-Turner Div.)

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Throwaway Inserts

High speed steel throwaway inserts for difficult high temperature alloy turning applications are covered in a data sheet. The square or triangular inserts are used in positive rake tool holders and are precision ground. (Firth Sterling, Inc.)

For free copy circle No. 28 on postcard

Precision Casting

A 16-page booklet pictorially describes a new 27,000 sq ft plant. The plant turns out both ferrous and nonferrous precision castings. (National Precision Casting Corp.)

For free copy circle No. 29 on postcard

Quantometer

Designed primarily for the iron and steel industry, a new quantometer is fully automatic. It enables complete steel analysis with only a single instrument. A 4-page folder gives details. (Applied Research Laboratories)

For free copy circle No. 30 on postcard

Couplings

A catalog features a comprehensive line of couplings. These include a variety of types of die cast and steel, fixed bore and bushed type, rigid, flexible and chain, and "unbreakable" malleable jaw coupling in both fixed bore and bushed type. (Browning Mfg. Co.)

For free copy circle No. 31 on postcard

Castings

High-temperature corrosion and abrasion resistant castings are dealt with in a bulletin. It presents production and laboratory facilities of a firm that produces such castings. Two tables give temperature properties of various heat resistant alloy castings and the composition and typical uses of the company's alloys. (Blaw-Knox Co., National Alloy Div.)

For free copy circle No. 32 on postcard

Circuit Breakers

Fundamentals of selective short-circuit protection for motor circuits are covered in a new bulletin. In 8 pages it reviews features of type ETI molded-case circuit breakers, instantaneous magnetic-trip devices specially suited for short-circuit protection of motor circuits. They are recommended for use in series with, and directly ahead of, the properly selected motor-running overcurrent trip device. (I-T-E Circuit Breaker Co.)

For free copy circle No. 33 on postcard

Nuclear Products

Products, facilities and services of a company's nuclear products division are illustrated in a data memorandum. Products listed include control rods and channels or structurals for control rods and fuel element assemblies. (Superior Tube Co.)

For free copy circle No. 34 on postcard

Pulleys

Cast iron pulleys are featured in a 16-page catalog. (Hewitt-Robins, Inc.)

For free copy circle No. 35 on postcard

Layout Machine

A layout machine is introduced in a 4-page brochure as a "revolutionary engineering advancement." It announces a unit that lays-out vertical and horizontal, inside and outside layout lines. (Portage Double-Quick, Inc.)

For free copy circle No. 36 on postcard

Clamshell Buckets

Single line, hook-on buckets are dealt with in a 16-page brochure. It tells how to select the right type and size for your particular needs. (Erie Strayer Co.)

For free copy circle No. 37 on postcard

New Production Ideas

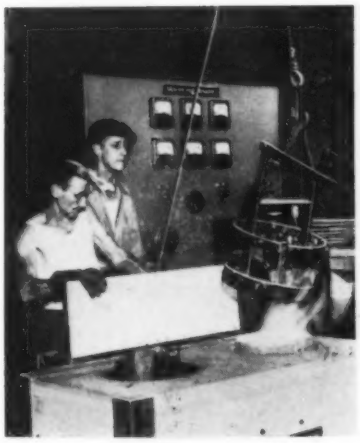
Equipment, Methods and Services

Straddle Truck and Crane Combine Into One

Combining a traveling bridge and a mobile crane into one efficient unit, this materials handler isn't of the usual cantilever type; the center of load is always inside its wheel supports. This eliminates need for counterweights, stabilizers or jacks. It allows practically unrestricted freedom in mobility and function. The carried load suspends from a hook under the unit's frame. This hook can be spotted directly over the load. It's controlled by a trolley hoist on the top structure. The unit acts much like a shop crane. However, it isn't restricted to railroad tracks. It's self propelled, has pneumatic tires. (Silent Hoist & Crane Co.)

For more data circle No. 38 on postcard, p. 99

Induction Furnaces Have High Melting Speeds



Induction melting furnaces in a new line feature high melting speeds and accurate metallurgical control. Available in push-out and tilting types, they come in 50 to 5000-lb capacity models. For nonferrous alloys, the push-out furnace offers advantages in transfer time and interchange crucibles when contamination from one alloy to another can't be tolerated. Push-out furnaces come as single or dual units. The tilting-type furnace is recommended for steel and ferrous alloys. They melt nonferrous ones, too, if desired. Using 30 to 1250-kw motor-generator sets, both furnaces produce uniform analyses. High melting speed at frequencies from 960 to 10,000 cps minimize metal loss; there's nothing to contaminate the molten pool. Sturdy furnace construction does away with distortion. Linings last longer. Leads and heavy-duty selector switches are water cooled also. (Westinghouse Electric Corp.)

For more data circle No. 39 on postcard, p. 99

Inspects Sections Without Cutting Workpiece

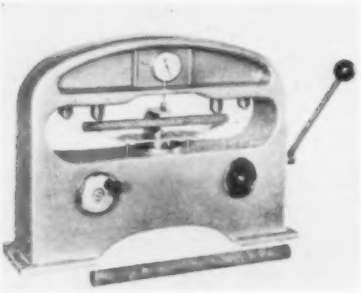
For inspecting edge contour sections of aircraft engine components, this 14-in. optical section comparator checks sections without need for cutting the workpiece. It was originally developed to inspect contours of jet engine blade edges and the fairing between the edge contour and the foil contour. The comparator uses two high-intensity illuminating units. These produce collimated light. Lights mount on the machine's hood. The manually operated blade orienting fixture has an adjustable locating "V" and built-in knife edge. Collimated light projects past the knife edge onto the blade held in the locating "V." A straight line shadow thus formed is inspected, on the viewing screen, as a cross sectional view of the blade edge contour. By moving the blade to and from the lens, the edge contour may be fully inspected. (Jones & Lamson Machine Co.)

For more data circle No. 40 on postcard, p. 99

Rotating Magnetic Field Drives Pump Impeller

A rotating magnetic field drives a pump impeller to eliminate the need for any seals or stuffing boxes on a new filter. It's an innovation, the manufacturer claims, that lessens the chance of costly solution loss in filtration of precious-metals solutions. It will also eliminate solution contamination by lubricants. The new filter unit utilizes a canned turbine pump and motor unit which is continuously lubricated by the solution being pumped. The stainless steel filter tube contains an element of specially processed cotton or dynel yarn wound around a stainless supporting core. This cartridge filter element can be supplied to filter particles from 150 down to 1 micron sizes. Flow rate is easily adjusted from zero to maximum by simple pinch valves, since the canned turbine pump-motor unit will not overload due to flow restriction and will use less power as flow diminishes. (Sel-Rex Corp.)

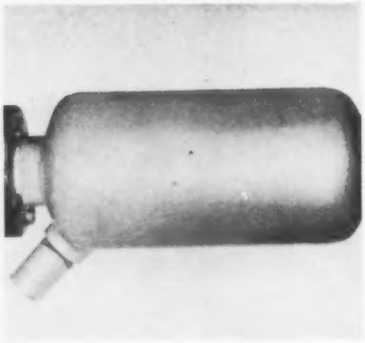
For more data circle No. 41 on postcard, p. 99



Transverse Tester Finds Iron Properties Fast

This transverse tester provides foundries with a fast, accurate means of determining physical properties of cast iron. Making use of the transverse testing method, the device gives data within four minutes after the test bar cools to handling temperature. Machining is unnecessary on the transverse bars. The machine can be run by an operator who has no special training. The tester has a leaf spring bar holder; this locates test bars and prevents broken bars from leaving the machine. Changeover from 12 to 18-in. long bars just seconds. (Pasadena Hydraulics, Inc.)

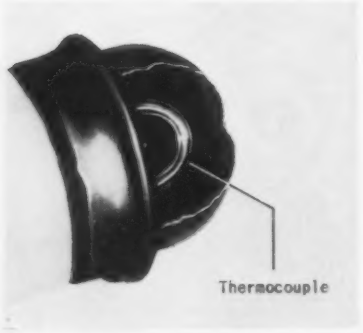
For more data circle No. 42 on postcard, p. 99



Separators Remove Entrainment from Lines

Almost 100 pct of all entrainment passing through vapor and process lines can be removed by this separator. So states its developer. The firm points out that the separator has extremely high capacity. The unit installs directly in the operating line either horizontal or vertical upward. It removes entrainment through internal knitted wire mesh. Separator vessels normally are made of carbon steel. But they're also available in stainless. Internal elements are standard in Type 304 stainless; they do come, though, in T-316, Monel, nickel, and other materials if necessary. The manufacturer says pressure drop is almost nonexistent. (A.C.S. Industrial Div., American Copper Sponge Co., Inc.)

For more data circle No. 43 on postcard, p. 99



New Thermocouple—Read and Throw It Away

A new expendable immersion thermocouple for reading molten steel temperatures is a one shot item. Said to compare to cost with other methods, the thermocouple has an obvious advantage — low maintenance. Just take a reading and then throw it away. It means a brand-new immersion couple for each measurement. The equipment consists of a length of standard 1-in. black iron pipe with a handle on one end and a fittting on the other to hold a cartridge. This cartridge is a refractory cylinder with contacts at the recepticle end and a platinum, platinum-10-pct rhodium thermocouple enclosed in a U-shaped sheath extending from the immersion end. A sheet steel

cap covers it but melts in molten steel. The throw-away feature means every reading has new couple accuracy. (Leeds & Northrup Co.)

For more data circle No. 44 on postcard, p. 99

Boring Head

Miniature in size, this boring head employs an offset feature to compensate for tool grinds. Yet it's small enough to hold in the palm of your hand. The head, for precision boring machine use, is 2-¼-in. diam, 1-15/16-in. long. It weighs

just 22 oz. The head holds quills up to ½-in. diameter. Its miniature size in no way detracts from its accuracy. Positive 0.0001 in. adjustments without backlash are possible. A calibrated micrometer screw offsets the tool slide to compensate for tool grinds. (Precision Tool & Mfg. Co.)

For more data circle No. 45 on postcard, p. 99

Heating Element

A "wire mesh" surface heating element's design enables it to be "self mending" in case of damage to the element. Heart of it consists of 36 wires per inch of heater width in a parallel circuit. This gives a heat source every 0.028 in. In addition to the 36 parallel wires, another continuous strand wire is looped and interwoven 30 times per inch running perpendicular to the current flow. This automatically distributes current flow from one or more of the parallel circuit wires around the damaged area. Thus it's "self mending." (Electrofilm, Inc.)

For more data circle No. 46 on postcard, p. 99

Plating Anodes

Expanded mesh anodes for rhodium electroplating are made from platinum clad tantalum. Cladding the platinum to tantalum can cut material costs 90 pct compared with solid platinum anodes, their developer believes. The expanded mesh allows considerable anode distribution and uniform plating. The platinum layer need be no thicker than 0.00025 in. (Metals & Controls Corp.)

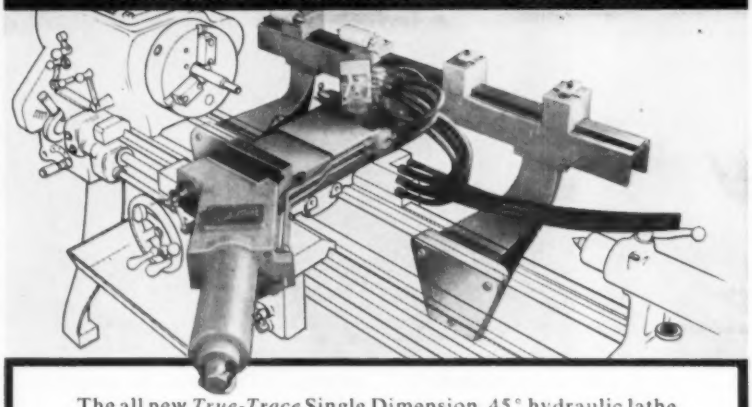
For more data circle No. 47 on postcard, p. 99

Deburring Setup

Adaptation of a standard deburring tool to unusual applications such as deburring internal annular grooves about a central bore of 3/16-in. diam is now possible. A new tool design makes such jobs easy. The tool features an angulated cutter which can be mechanically projected from and retracted into a long cylindrical pilot by the operator's movement of a knurled sleeve. It works with lathes, drill presses, or hand drills. (Nobur Mfg. Co.)

For more data circle No. 48 on postcard, p. 99

TRUE-TRACE
LATHE TRACER ATTACHMENT
ACCURACY • DEPENDABILITY • VERSATILITY



The all new *True-Trace* Single Dimension, 45° hydraulic lathe tracer attachments are specifically designed and engineered to convert standard engine lathes to modern contour turning machines. *True-Trace* precision controls and unique features permit relatively unskilled labor to produce a greater volume of parts, more accurately . . . at less cost! Whatever your job or requirements, let *True-Trace* show you how to get more from your present lathes with a tracer attachment.

- ADAPTABLE TO MOST LATHES
- NEW CROSS AND TOOL POST SLIDES — CAST OF MEEHANITE
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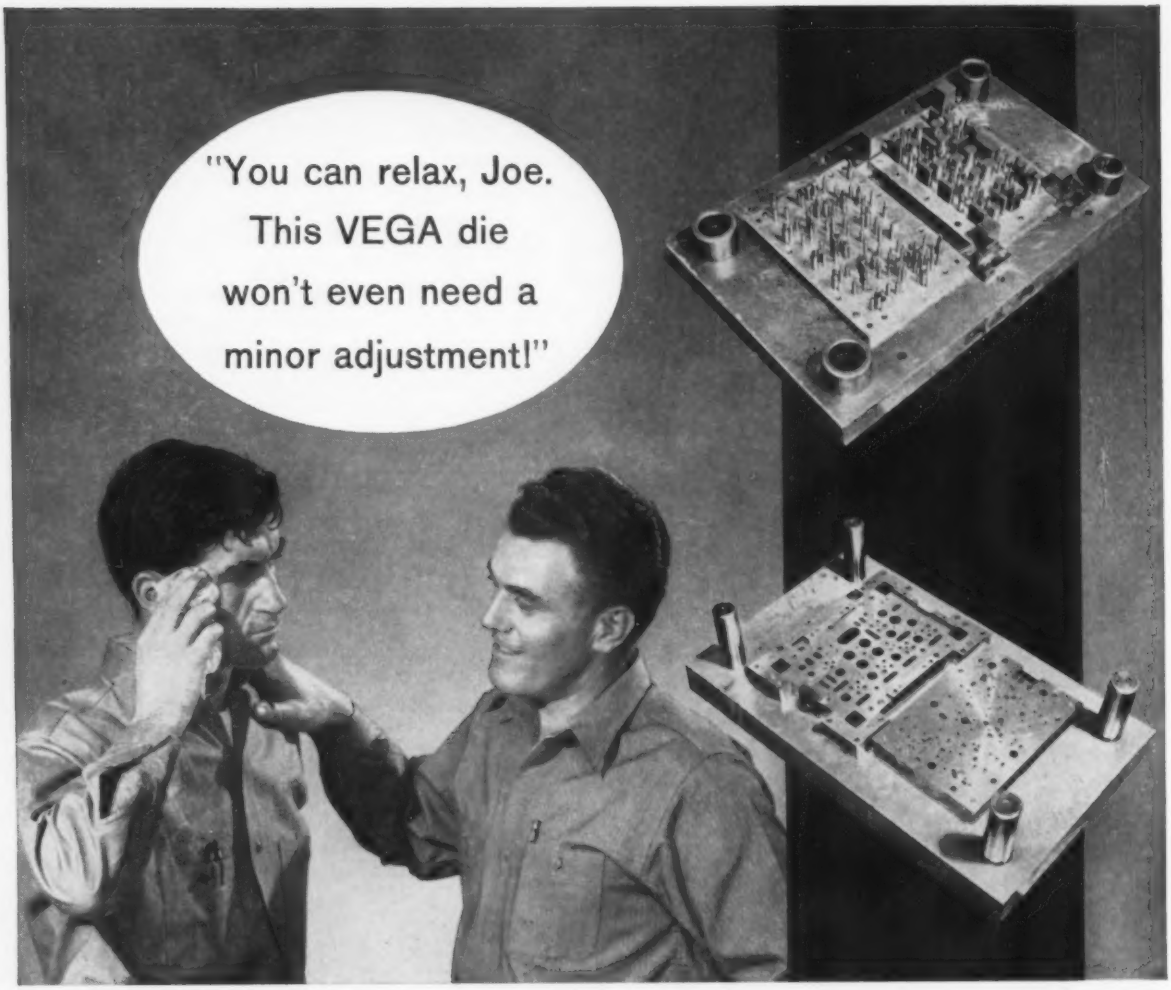


Joe's worrying started with an idea he gave the boss.

Why produce this radio chassis die in sections? If we can do it in one unit we'll save money.

The boss agreed. But he bet Joe that warping or cracking would wreck his plan . . . and the die!

Using Carpenter VEGA — Joe knew the reputation of this air-hardening tool steel for stability — he went to work. He laid out the holes — 194 of them — on the punch pad and made the punch pads and their dies in one operation. Risky, but economical. The slightest size change in heat treatment . . . and you've had it!

Joe sweated all during heat treating. Then came the final check. With VEGA, only .002" had to be removed with a surface grinder to make the die absolutely flat. The punch pads fitted the die perfectly . . . not even a minor adjustment necessary.

Joe's experience with VEGA isn't exceptional. So if you have a job that requires minimum distortion and size change . . . and you want easy heat treating and extra toughness to boot . . . give VEGA (Air-Tough) a try. Your nearby Carpenter SERVICE-CENTER assures fast delivery from complete stocks.

Carpenter STEEL

Matched Tool and Die Steels

The Carpenter Steel Co., 121 W. Bern St., Reading, Pa.

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

® U. S. Patent Office, The Carpenter Steel Co., Reading, Pa.

The Iron Age Summary

Mideast Stirs Inventory Jitters

Steel users are taking a hard second look at their inventories.

World crisis also raises possibility of quicker action on steel prices.

■ The Mideast crisis is giving steel users a bad case of inventory jitters. Metalworking companies with low steel inventories are now taking a hard second look at their stocks. Some have already moved quietly to bolster their market position.

The uncertain international outlook is likely to give a shot-in-the-arm to the modest betterment already apparent in the steel market.

Modest Pickup to Date—There has been no sharp pickup in steel buying as yet. But the auto companies will be stepping up their buying in the near future. Other major users had been expected to come into the market for heavier tonnages soon even without the impetus of Mideastern developments.

Before the Marines landed in Lebanon steel orders had improved over the low point of early July. The pickup is continuing in hot-rolled bars, concrete reinforcing bars, galvanized sheets, and sheets and strip. Steel output is likely to hit 55 pct or higher this month, with a 75-80 pct rate looked for in the fourth quarter.

Oil Companies Alerted—The oil country goods market—drill pipe and casing used in the drilling of wells—is particularly sensitive. The mills are already being alerted for a possible influx of orders for these steel products. Indications are that oil companies, which have been living hand-to-mouth from a steel standpoint, are carefully re-examining their inventory position.

These events also raise the question of whether action on steel prices will be quickened. Chances are that the expected steel price boost will not come until August. But the Mideast developments and their possible consequences could bring quicker action. (See page 42)

Sad Experience—For one thing, steel mills are aware of the possibility of price and wage controls should world conditions worsen. They recall their experience during World War II when controls closed the door to attempts to compensate for higher wage and material costs. They don't want to be caught short again.

Overall, the trend in the steel market has been upward during the last several weeks. The mills report a better-than-expected pickup in some directions. Structurals have been improving right along. The rise in linepipe demand will eventually strengthen the plate market, although that product is easy for the moment.

Uptrend Will Continue—Even if world tensions ease up, the market is likely to continue its upward trend. Signs are increasing that the recession could reverse its field in the near future. This alone would generate more steel buying since inventories of most users are at a low-low level.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 1,539	Last Week 1,485	Month Ago 1,687	Year Ago 2,035
Ingot Index (1947-1949=100)	95.7	92.4	105.0	126.7
Operating Rates				
Chicago	62.0	63.0*	69.0	80.0
Pittsburgh	49.5	46.0*	61.0	82.0
Philadelphia	65.0	60.0	65.0	83.0
Valley	48.5	46.0*	43.5	73.0
West	66.0	62.0*	70.0	103.0
Cleveland	49.0	46.0*	50.0	76.0
Buffalo	39.0	39.0	44.0	90.0
Detroit	56.0	57.0*	66.0	85.0
South	53.5	53.5	68.0	87.5
South Ohio River	39.0	38.0*	63.0	64.0
Upper Ohio River	72.0	77.0*	71.0	72.0
St. Louis	95.0	87.0*	93.0	79.0
Northeast	35.5	35.5	35.5	37.0
Aggregate	57.0	55.0	62.5	79.5

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.967
Pig Iron (Gross ton)	$66.49	$66.49	$66.49	$66.40
Scrap, No. 1 hvy (Gross Ton)	$38.17	$37.50	$35.17	$53.83
No. 2 bundles	$27.17	$26.83	$25.83	$44.17
Nonferrous				
Aluminum ingot	26.10	26.10	26.10	27.10
Copper, electrolytic	26.50	25-26.50	25-26.50	29.25
Lead, St. Louis	10.80	10.80	11.30	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	95.125	94.375*	94.625	96.00
Zinc, E. St. Louis	10.00	10.00	10.00	10.00

Motor Makers in Cost Squeeze

Motor builders see advantages in holding price line but find it difficult.

Their alternatives: Pass increased costs on to customers or face a profit pinch.

▪ Sharp competition in the electric motor industry is bringing user benefits of tight pricing, fast delivery, and improved design.

Fractional horsepower motors are feeling the greatest price pressure. There have been no price hikes this year and none are in sight. One manufacturer felt the only change might be scattered and minor cuts.

However, producers are hoping for a sales climb. They see signs of improvement and point out that their market has been depressed for over a year. Any sales gain could lift prices since the industry is badly squeezed now.

Integral Motor Pricing—Integral horsepower motors could be heading for a similar squeeze. Prices of direct current models went up about 3 pct in February of this year. A revision in price schedules of ac models in April had the effect of a small increase.

However most motor makers went over to a firm price policy in April. Under new terms, the customer is assured of no price increase at any time within six months of order placement. With material and labor costs due to jump, motor men may face a profit pinch.

Large Motor Pricing—Prices of large motors are firm despite a 20 pct drop in sales this year. Manufacturers put through a 3-4 pct increase in April. They are hoping to pass along part of the added costs that are coming. Pricing is competitive in the heavy motor industry but not cutthroat. Producers still remember the profitless business that resulted from the 1955 auction of heavy electrical equipment.

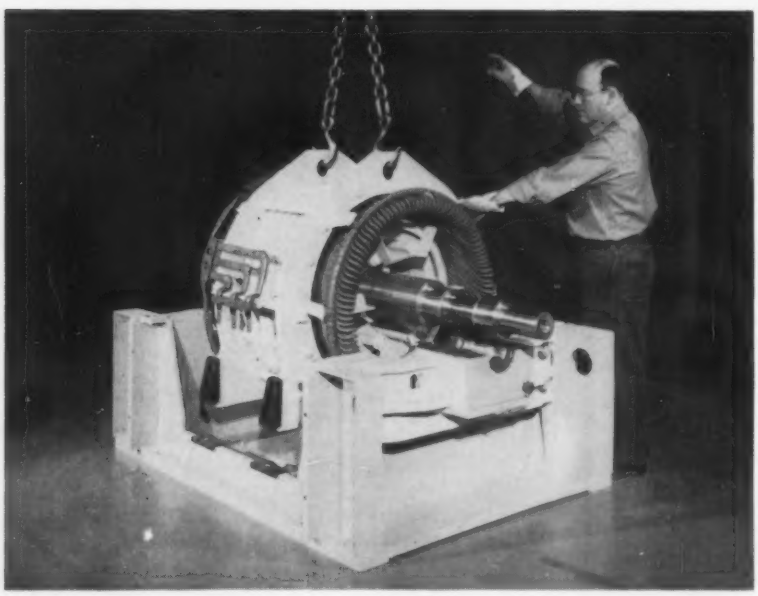
Deliveries Are Good—Customers are asking and getting delivery of fractional horsepower motors in three to four weeks. Special models are available in six weeks. To make this kind of delivery, one plant has beefed up its stock of manufacturing parts. Things like shafts and frames are machined and stocked prior to the receipt of an order. Assembly time is reduced. The plant gets by without a large finished inventory.

Deliveries of integral horsepower motors are being made out of stock on standard models. Standard nonstock motors run two to three weeks for up to 30 hp; four to six weeks for 40 hp to 150 hp; and six to seven weeks for up to 500 hp. A sudden upturn in orders could extend deliveries overnight. Producers are carrying heavy finished inventories but they have made sharp cutbacks on their material in process.

Large motors are available in normal shipping times. Producers have open capacity for all motor sizes. Delivery is governed by the production cycle, which can vary from eight weeks to a year.

Design Trends — The general motor trend is toward more compact power packages. Fractional horsepower motors are getting smaller and are running hotter.

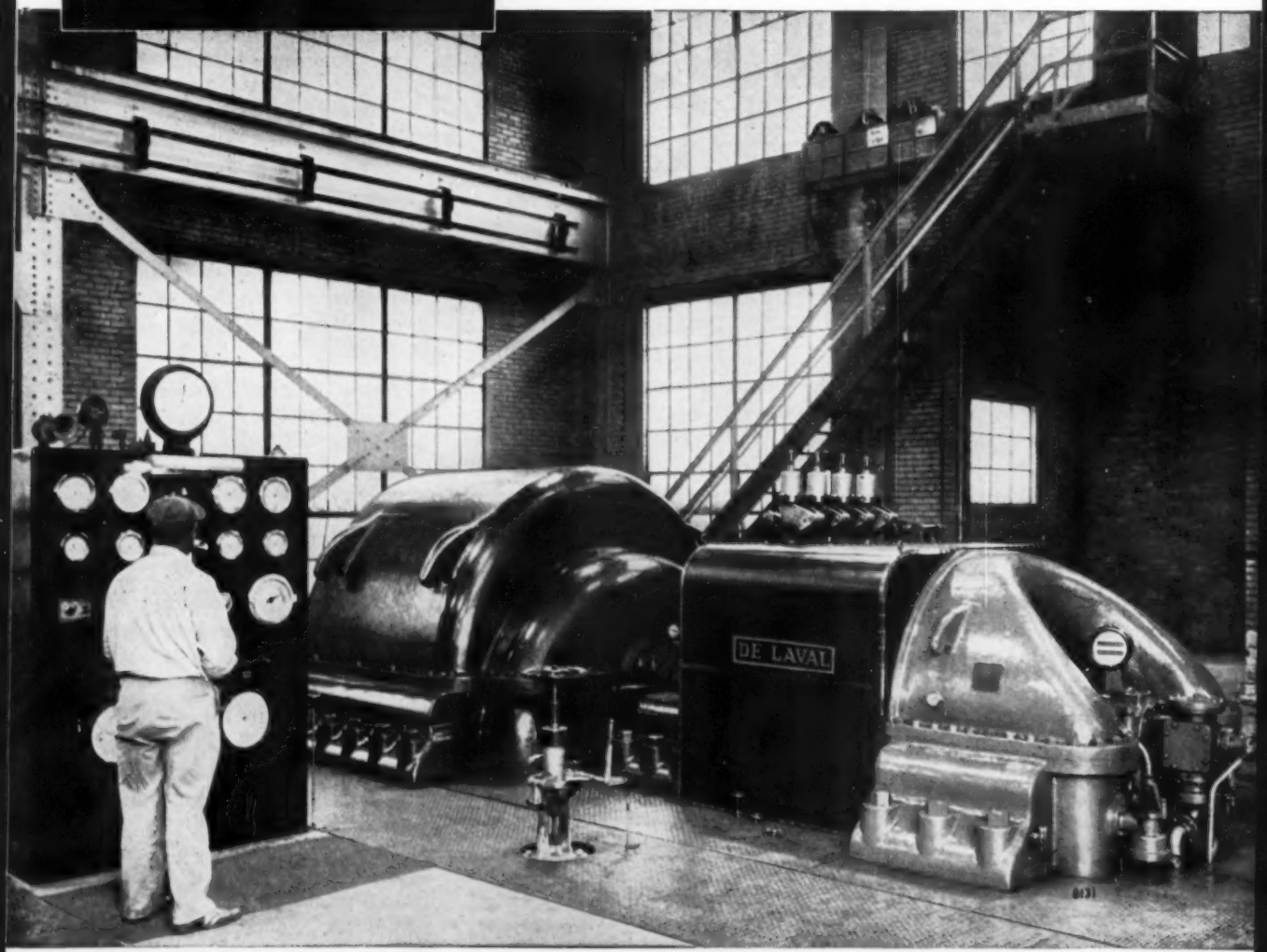
The re-rating of integral horsepower motors up to 125 hp is largely completed. Manufacturers are now working on the redesign of models above 125 hp.



NEW DESIGN: Large ac motors from Westinghouse are now made so stator is easily accessible for inspection. Enclosure, formerly cast or welded as part of stator, is made separately and bolted to motor base later.

DE LAVAL
BLAST FURNACE BLOWERS

give 20 years of service at Great Lakes Steel Corp.



Shown is one of two De Laval centrifugal blast furnace blowers at the Ecorse, Michigan, plant of the Great Lakes Steel Corporation, Division of National Steel Corporation. This 85,000 cfm unit was installed twenty years ago; another 75,000 cfm unit went on the line a year earlier. Both have given dependable round-the-clock service ever since. These turbine-driven blowers are hooked up to a multi-head which enables either one to be used in conjunction with any of the three blast furnaces.

De Laval centrifugal blowers are built in single and multi-stage types to supply air in volumes up to 150,000 cfm for all classes of service in steel, gas and coke plants. The wealth of application experience acquired by De Laval over the years assures a correct and economical solution to your blower problem.

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Sales Revival Lifts Lagging Products

Gains in orders for oil country goods, linepipe, stainless, and bar are showing up.

While not spectacular they are helping products long in the doldrums.

▪ Some lagging steel products—oil country goods, linepipe, stainless and bar—are beginning to show signs of strength.

The upsurge of interest in these items, although not spectacular, is encouraging steel salesmen. Combined with the return of automotive steel buyers to the market, it brightens third quarter market prospects.

Behind The Trend—Several factors may work to revive long quiet oil country goods sales. Oil producers are finding more holes in their inventories. Many have worked themselves down to rock-bottom on the popular items.

It's still a little too early for the Middle East crisis with its oil overtones to influence oil field equipment sales. But it's a sure bet domestic producers are closely reviewing their coming needs.

Auto Revival — August automotive orders will help the market for stainless and bar. But other buyers are also active. Farm implement and construction equipment makers, for example, are aiding bar sales.

The linepipe market continues improving despite the still unresolved Memphis decision. And more demand for linepipe means more use of heavy plate by pipe mills.

Sheet and Strip—Sheet mills are looking for about a 20 pct improvement in shipments next month. At the moment August orders are coming in slowly. However with lead times still short the mills expect to pick up a lot more tonnage this week and next.

Automotive steel suppliers say they have received orders for "respectable but not spectacular" tonnages for delivery in August. Many auto plants are either closed or closing as they get ready to swing over to 1959 model production.

Plates—The market is expecting a rebound to May-June levels next month after a July dip. One **Eastern** mill reports August tonnages are already double the amount received at this time in June for July delivery. Some producers say June price hedge buying dried up July orders. Others believe the level of user stocks is a big factor in the lack of sales. They expect a steady climb in orders after a brief and shallow inventory adjustment is completed.

On the **West Coast** a major plate mill is down for a two-week vacation. Only tonnage moving in the area is very heavy plate (4 in. and up) coming in from the East. It's going to flame-burning shops and tank manufacturers.

Shapes — Structurals remains among the stronger products in the market. However, users can still count on getting deliveries in 2-4 weeks, according to a major **East Coast** supplier. July orders are down from June levels but some pickup is expected next month. Structural inquiries are strong, a mill reports, indicating new orders should be coming in shortly.

"There's some activity in structurals," says a **Farwest** mill sales manager. "It's not exactly brisk but the market is out of the doldrums. The movement is in the smaller sections. Wide flange beams are not moving."

Bars — Producers of hot-rolled bars look for a modest market improvement in August. Their current order position has August up about 5-10 pct over July levels. Farm implement and construction equipment makers are the most active buyers in the market.

The outlook for automotive bar orders is still cloudy, but August tonnages should top June. Auto firms have placed some good orders, but still haven't given the green light on releases.

Pipe and Tubing—Linepipe shipments are moving at surprisingly good rates although mills are still living from hand to mouth. New orders keep arriving just as slack periods threaten. One **Eastern** pipe mill, down for the last few months, expects to start processing a large export order soon.

During the first half of this year linepipe projects were breaking loose one by one. Now schedules are firmer and a big rush may come when 1959 begins.

Stainless — Large automotive orders for stainless strip are still several weeks off. Two auto producers have entered some orders for delivery in late August and early September. Currently, stainless shipments are down although the July drop was not as great as expected.

PURCHASING AGENT'S CHECKLIST

Crisis in Middle East sounds alert for buyers to check their inventories. **P. 43**

Lower freight costs are coming next month. **P. 46**

Taking a look at what's ahead for numerical controls. **P. 77**

COMPARISON OF PRICES

(Effective July 22, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	July 22 1958	July 15 1958	June 24 1958	July 23 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.925¢
Cold-rolled sheets	6.05	6.05	6.05	6.05
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.60
Hot-rolled strip	4.925	4.925	4.925	4.925
Cold-rolled strip	7.17	7.17	7.17	7.17
Plate	5.12	5.12	5.12	5.12
Plates, wrought iron	13.15	13.15	13.15	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) coke	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.425¢
Cold finished bar	7.30	7.30	7.30	7.30
Alloy bars	6.475	6.475	6.475	6.475
Structural shapes	5.275	5.275	5.275	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.45	14.45	14.45	14.45
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.525
Light rails	6.50	6.50	6.50	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$77.50
Slabs, rerolling	77.50	77.50	77.50	77.50
Forging billets	96.00	96.00	96.00	96.00
Alloy blooms, billets, slabs	114.00	114.00	114.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	6.15¢
Skelp	4.875	4.875	4.875	4.875
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.967¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

	July 22 1958	July 15 1958	June 24 1958	July 23 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$70.38
Foundry, Valley	66.50	66.50	66.50	66.50
Foundry, Southern Cin'ti	73.87	73.87	73.87	70.67
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.47	70.47	70.47	69.88
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	67.00
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gros ton)				
Pig iron	$66.49	$66.49	$66.49	$66.40
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$40.50	$39.50	$37.50	$56.50
No. 1 steel, Phila. area	34.50	34.50	33.50	53.50
No. 1 steel, Chicago	39.50	38.50	34.50	51.50
No. 1 bundles, Detroit	31.50	31.50	31.50	48.50
Low phos., Youngstown	41.50	39.50	37.50	57.50
No. 1 mach'y cast, Pittsburgh	48.50	48.50	48.50	58.50
No. 1 mach'y cast, Phila.	48.50	47.50	47.50	56.50
No. 1 mach'y cast, Chicago	48.50	47.50	45.50	52.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$38.17	$37.50	$35.17	$53.83
No. 2 bundles	27.17	26.83	25.83	44.17
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$15.38
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	25-26.50	25-26.50	29.25
Copper, Lake, Conn.	26.50	25.00	25.00	29.25
Tin, Straits, N. Y.	95.125†	94.375*	94.625	96.00
Zinc, East St. Louis	10.00	10.00	10.00	10.00
Lead, St. Louis	10.80	10.80	11.30	13.80
Aluminum, virgin ingot	26.10	26.10	26.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance 105
Comparison of Prices 109
Bars 119
Billets, Blooms and Slabs 117
Boiler Tubes 122
Bolts, Nuts, Rivets, Screws 121
Clad Steel 122
Coke 122
Electrical Sheets 122
Electrodes 122
Electroplating Supplies 121
Ferroalloys 124
Iron Ore 122
Merchant Wire Products 122
Metal Powders 121
Nonferrous
- Mill products 116
- Primary prices 109-114-116
- Remelted metals 116
- Scrap 116

Pig Iron 123
Pipe and Tubing 120
Plates 119
Rails 122
Refractories 122
Shapes 117
Sheets 118
Spring Steel 122
Stainless 123
Steel Scrap 112
Strip 117
Structurals 117
Tinplate 118
Tool Steel 122
Track Supplies 122
Warehouse Prices 121
Water Pipe Index 121
Wire 119
Wire Rod 118

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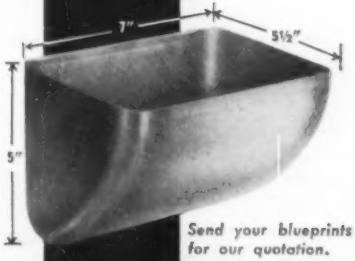

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September Hopes Bull the Market

Consumers buying scrap today have to pay prices based on dealer anticipation.

It may be a gamble, but the immediate effect is to bull the market over present demand.

■ The trade is betting heavily on a strong September demand. This willingness to gamble on higher prices in the fall has created a bullish market and higher prices.

Current demand is not strong, but dealers are holding out for September prices, and with enough success to create a general upward movement.

Some areas have not caught the fever, but a strong undercurrent is apparent even in markets where prices are as yet unchanged.

Strength centers in the Midwest, but Pittsburgh mills are also paying more. Broker buying is stronger, with some brokers reported to be paying prices equal or better than mill quotations.

The market is also affected by anticipation of very low August industrial lists, which will have the effect of strengthening demand for prime grades.

Pittsburgh — Prices of dealer openhearth grades are up $1. Local mills are still not placing tonnage orders. Resistance of yards has been stiffened by activity in other districts, anticipation of better steel business, the world crisis, and the easing of credit. Having held scrap this long, dealers are reluctant to sell now, with the possibility of the first real market in over a year. Turnings, factory bundles and low phos all moved up in sympathy with the general strength.

Chicago—The brokers market here is hot, and in some cases broker prices are equal to consumer prices or higher. But, so far, mills have failed to warm up to the same degree and few have placed new orders. One consumer points out that there is enough buying to match supply, giving strength to the market. But dealers also are looking past this month to September, and anyone wanting scrap now will have to pay what dealers think it's worth.

Philadelphia—A new wave of optimism here was touched off by an export order for shipment of No. 1 and No. 2 heavy melting to Spain. Some dealers are resisting the broker offer of $2 under the domestic market to cover the order. Domestic mills have also shown a new, although limited, interest in buying scrap. A sale of shoveling turnings was made at $20, a $1 increase.

New York—This market continues to maintain prices, although orders are few and far between. A combination of shortage of material and optimism for the short-term are main props. Stainless is particularly short, and brokers are convinced that new orders will raise prices.

Detroit—There is a stronger tone to the market, but lack of sales has kept it from being reflected in prices. Local mills have hinted to brokers that a show of strength on industrial lists could result in a lessening of interest in scrap for August, as their buys of the past two months anticipated a reduction in August scrap output. Dealers and brokers are also watching a new blast furnace. It could temper the buildup of optimism by cutting scrap requirements upwards of 35,000 tons per month.

Cleveland— The market is up $2 here based on a restricted sale of industrial bundles. In the Valley, a mill raised its price on dealer grades for prime material. Dealers are feeling bullish and reluctant to sell. Most prime grades have been bled off to meet expenses.

St. Louis — District mills are reaching out for distant scrap on a springboard basis to get enough to meet their requirements. Standard steel car axles are up $1 on outside buying and rerolling rails up $2.

Birmingham — Although purchases made recently have shown slight increases, the market lacks substance. Dealers are reluctant to sell, and consumers show little real interest. Brokers have to scatter purchases of even small amounts among dealers and mills are buying only enough for immediate needs.

Cincinnati—A bullish feeling has taken over as some scrap is being drained off to other areas. Production lists in the area for August will be barely half of the July tonnage, so a scramble is materializing. Price is up $2 on appraisal of prime grades and $1 on secondary grades.

Buffalo—The undercurrent of the market is a little stronger. But prices are unchanged in the absence of any buying.

Boston—Some cast grades and No. 2 bundles edged up, but there is little change in the overall market. Primary grades were not affected by the minor price fluctuation.

West Coast—The market continues sluggish in all three Coast areas. Mills are in the market for small quantities, and they are buying only enough to meet their needs. Prices are unchanged.

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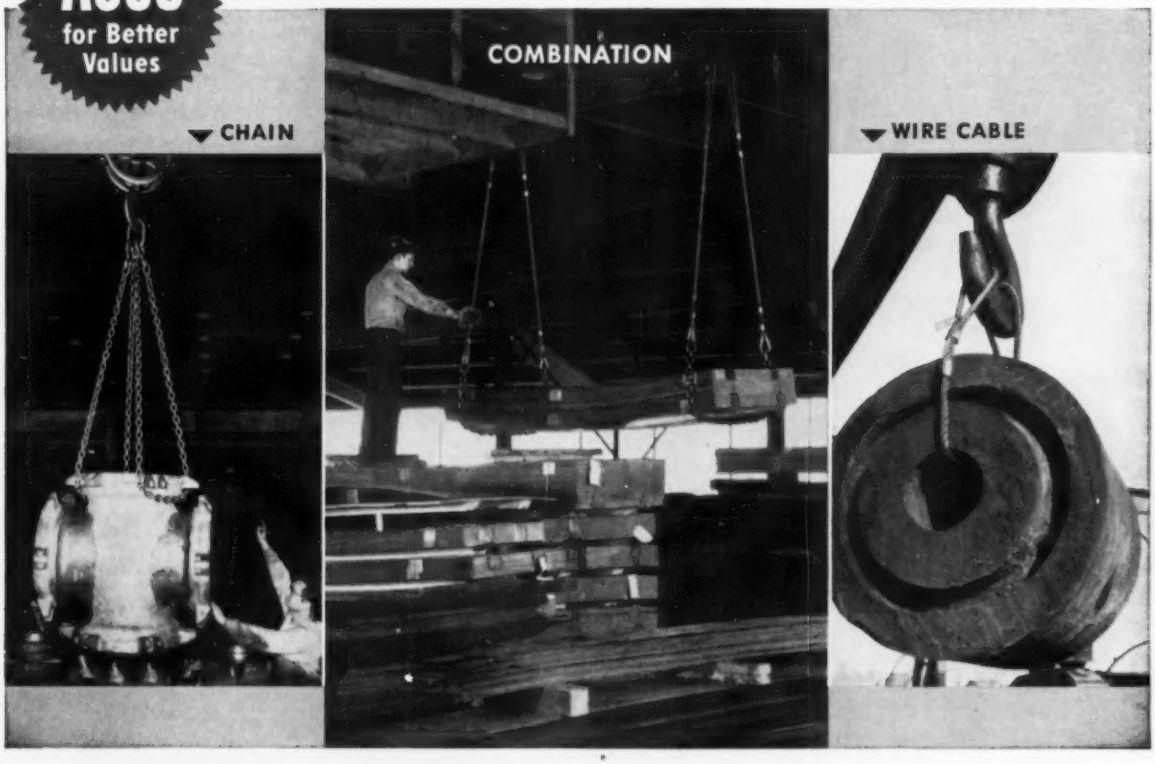

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SCRAP PRICES *(Effective July 22, 1958)*

Pittsburgh

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	40.00 to 41.00
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and ms. turn.	17.00 to 18.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. punch'gs plate	42.00 to 43.00
Heavy turnings	33.00 to 34.00
No. 1 RR hvy. melting	42.00 to 43.00
Scrap rails, random lgth.	51.00 to 52.00
Rails 2 ft and under	54.00 to 55.00
RR steel wheels	47.00 to 48.00
RR spring steel	47.00 to 48.00
RR couplers and knuckles	47.00 to 48.00
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	39.00 to 40.00
Stainless	
18-8 bundles and solids	185.00 to 190.00
18-8 turnings	105.00
430 bundles and solids	105.00 to 110.00
410 turnings	45.00

Chicago

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	39.00 to 40.00
No. 1 factory bundles	44.00 to 45.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	23.00 to 24.00
Low phos. forge crops	48.00 to 49.00
Low phos. punch'gs plate	45.00 to 46.00
Low phos. 3 ft and under	42.00 to 43.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	49.00 to 50.00
Rerolling rails	58.00 to 59.00
Rails 2 ft and under	54.00 to 55.00
Locomotive tires cut	50.00 to 51.00
Cut bolsters & side frames	47.00 to 48.00
Angles and splice bars	51.00 to 52.00
RR steel car axles	64.00 to 65.00
RR couplers and knuckles	48.00 to 49.00
No. 1 machinery cast.	48.00 to 49.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Cast iron wheels	36.00 to 37.00
Malleable	51.00 to 52.00
Stove plate	38.00 to 39.00
Steel car wheels	46.00 to 47.00
Stainles	
18-8 bundles and solids	180.00 to 185.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	100.00 to 105.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	34.00 to 35.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	34.00 to 35.00
Machine shop turn.	16.00 to 17.00
Mixed bor. short turn.	16.00 to 17.00
Cast iron borings	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	38.00 to 39.00
Low phos. 2 ft and under	39.00 to 40.00
Low phos. punch'gs	39.00 to 40.00
Elec. furnace bundles	35.00 to 36.00
Heavy turnings	28.00 to 29.00
RR steel wheels	42.50 to 43.50
RR spring steel	42.50 to 43.50
Rails 18 in. and under	55.00 to 56.00
Cupola cast.	37.00 to 38.00
Heavy breakable cast.	40.00 to 41.00
Cast iron car wheels	41.00 to 42.00
Malleable	56.00 to 57.00
Unstripped motor blocks	30.00 to 31.00
No. 1 machinery cast.	47.00 to 48.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	15.00 to 16.00
Low phos. 18 in. and under	41.00 to 42.00
Rails, random length	44.00 to 45.00
Rails, 18 in. and under	54.00 to 55.00
No. 1 cupola cast.	41.00 to 42.00
Hvy. breakable cast.	33.00 to 34.00
Drop broken cast.	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	26.50 to 27.50
No. 1 dealer bundles	36.50 to 37.50
No. 1 factory bundles	39.00 to 40.00
No. 2 bundles	23.50 to 24.50
No. 1 busheling	36.50 to 37.50
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Cut structural & plates, 2 ft & under	39.00 to 40.00
Drop forge flashings	36.50 to 37.50
Low phos. punch'gs plate	37.50 to 38.50
Foundry steel, 2 ft & under	37.00 to 38.00
No. 1 RR hvy. melting	39.00 to 40.00
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	17.00 to 18.00
Railroad cast.	46.00 to 47.00
No. 1 machinery cast.	46.00 to 47.00
Stove plate	42.00 to 43.00
Malleable	58.00 to 59.00
Stainless	
18-8 bundles	175.00 to 185.00
18-8 turnings	95.00 to 100.00
430 bundles	90.00 to 95.00
430 turnings	35.00 to 40.00

Buffalo

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 busheling	26.00 to 27.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	12.00 to 13.00
Low phos. plate	32.00 to 33.00
Structurals and plate, 2 ft and under	35.00 to 36.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
RR steel wheels	36.00 to 37.00
RR spring steel	32.00 to 33.00
RR couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	43.00 to 44.00
No. 1 cupola cast.	39.00 to 40.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	15.00 to 16.00
Cast iron borings	17.00 to 18.00
Shoveling turnings	17.00 to 18.00
No. 1 RR hvy. melting	38.00 to 39.00
Rails, random lengths	45.00 to 46.00
Rails, 18 in. and under	50.00 to 51.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	57.00 to 58.00
RR specialties	41.00 to 42.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	32.00 to 33.00
Cast iron brake shoes	35.00 to 36.00
Stove plate	42.00 to 43.00
Cast iron car wheels	37.00 to 38.00
Rerolling rails	59.00 to 60.00
Unstripped motor blocks	34.00 to 35.00

Birmingham

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	36.00 to 37.00
Elec. furnace, 3 ft & under	34.00 to 35.00
Bar crops and plate	40.00 to 41.00
Structural and plate, 2 ft.	39.00 to 40.00
No. 1 RR hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	44.00 to 45.00
Rails, 18 in. and under	49.00 to 50.00
Angles & splice bars	40.00 to 41.00
Rerolling rails	56.00 to 57.00
No. 1 cupola cast.	52.00 to 53.00
Stove plate	51.00 to 52.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	37.00 to 38.00
Unstripped motor blocks	41.00 to 42.00

Youngstown

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	13.50 to 14.50
Shoveling turnings	18.50 to 19.50
Cast iron borings	18.50 to 19.50
Low phos. plate	41.00 to 42.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	22.00 to 23.00
No. 2 dealer bundles	15.00 to 16.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	34.00 to 35.00
Mixed yard cast.	32.00 to 33.00
Charging box cast.	31.00 to 32.00
Heavy breakable cast.	31.00 to 32.00
Unstripped motor blocks	22.00 to 23.00
Stainless	
18-8 prepared solids	155.00 to 160.00
18-8 turnings	55.00 to 60.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	18.00 to 19.00
No. 1 busheling	28.00 to 29.00
Drop forge flashings	27.00 to 28.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Low phos. punch'gs plate	29.00 to 30.00
No. 1 cupola cast.	37.00 to 38.00
Heavy breakable cast.	26.00 to 27.00
Mixed cupola cast.	38.00 to 39.00
Automotive cast.	39.00 to 40.00
Stainless	
18-8 bundles and solids	190.00 to 195.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	100.00 to 105.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	17.00 to 18.00
No. 1 dealer bundles	22.00 to 23.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	22.00 to 23.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and short turn.	5.00 to 6.00
Shoveling turnings	7.00 to 8.00
Clean cast. chem. borings	14.00 to 15.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	28.00 to 29.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Unstripped motor blocks	22.00 to 23.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn 1 ft and under (foundry)	43.00
No. 1 RR hvy. melting	33.00
No. 1 cupola cast.	39.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00

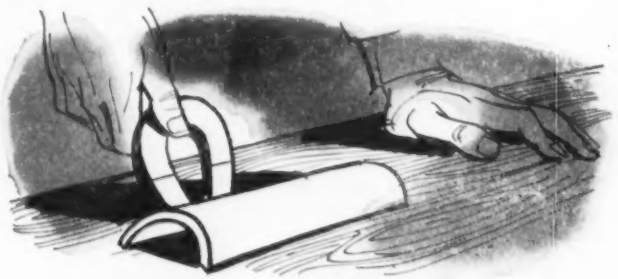
S-E-G-R-E-G-A-T-E-D SCRAP IS WORTH MORE

Here is how to test for STAINLESS STEEL TYPES 430 and 446

Last year, Types 430 and 446 accounted for the largest tonnage of all the stainless steel produced. The automobile industry alone consumed most of the 246,000 ton production of 430, the basic 17% chromium stainless steel, and expects to use even more for trim and transmission parts on future models. Additional applications in building, aviation, chemical processing and the production of heat resisting components for furnaces indicate increased demand, particularly for Type 430. This expanding market for special steels requires more and more scrap of known analysis. This is where we can help you. Our personnel, equipment, experience and strategically located facilities are specifically geared to fulfill present and future needs for dependably segregated alloy scrap. We welcome your inquiry.

Rub specimen with emory paper to obtain clean surface.

Add 1 drop of 10% hydrochloric acid and let react for 1 minute. Add 1 drop of 10% potassium ferricyanide solution. After 30 seconds if dark green to blue color appears sample belongs to iron alloy group.



Add 1 drop of concentrated sulphuric acid and let react for 1 minute. If there is no attack or slight reaction test with magnet. If the results are definitely magnetic, sample is probably either STAINLESS TYPE 430 or 446.

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Traders Say Tin Supply Is Safe

There's plenty of tin for U. S. users despite Mideast crisis, say traders.

They add that there has been little scare buying for the time being.

▪ Major U. S. tin traders say domestic tin users have little to worry about for the moment despite the Mideast crisis. They say there is plenty of tin available to U. S. markets from European smelters.

Even if the Suez Canal was cut off, as it was when Egypt seized it, they feel there would be enough available to meet even scare demand until ships from Singapore and Malaya could be re-routed across the Pacific.

Many traders say they don't see much of a chance of passage of tin carriers through the Canal being interrupted.

What Happened — Last week some market observers weren't so sure. The Singapore market, traditional world pace setter, took a substantial jump on Friday. And the price at New York went up a cent. Some thought it might be buyers with memories of paying $1.18 per lb at New York during the Suez blowup, even though world production easily topped consumption.

But the London price actually dropped despite hikes in the other markets. And when the smoke cleared both New York and Singapore reverted to their former levels. There appeared to be little scare buying.

The trade believes the Singapore fling was a mistake. The lowest accepted bid sets the price there. Traders believe that either there was a mistake in transmission of the bid ("It has happened to us.") or someone miscalculated, moving up the range of accepted bids.

Playing it Close—In New York, sellers say some of the big buyers were merely covering short positions. They claim that actual consumption of tin in the U. S. has held up pretty well. They blame lower sales volumes on inventory cutting.

"Most tin users are working with very small inventories and playing it close to the vest," says one trader. "One or two good orders and they scramble into the market to cover. This is likely to occur from time to time as long as inventories are low."

Another observer believes there probably was a little scare buying. But he says it has all subsided. "Not very many people seem to be taking the trouble in the Middle East seriously. And those that are bought a lot less than they would have if it had occurred a year and a half ago."

"Of course, if we are wrong and this turns out to be another Korea," says another seller, "the Government will take over and I won't even be able to talk to you."

Aluminum

One of the more dramatic possibilities reported as being considered by the U. S. State Dept. is a stockpile of U. S. and Canadian aluminum to be sold in underdeveloped countries in direct competition with cut-rate Russian metal.

The producers also suggested an anti-dumping law patterned after Canada. The Canadian law says that if the selling price to a Canadian importer is less than "the fair market value," or the value of the commodity set by the government for the purpose of collecting duty, a special dumping duty is to be levied. This is to be equal to the difference between the selling price and its value. It may not exceed 50 pct ad valorem.

The U. S. law provides for the same added duty in case of dumping, but has a number of time-consuming qualifications.

Copper

Without the benefit of any substantial new business, the producers' price has settled at 26.5¢ per lb. Kennecott, the last to fall into line, said the split price in effect for more than a month had been causing confusion in the market and retarding sales.

Just about a month ago, industry observers and some fabricators were writing the epitaph for the higher price initiated by Anaconda.

Tin prices for the week: July 16—94.75; July 17—95.50; July 18—96.50, July 21—95.125; July 22—95.125.*

*Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingot	26.10	28.10	4/1/58
Copper (E)	26.50	25-26.50	7/17/58
Copper (CS)	26.00	25.50	7/2/58
Copper (L)	26.50	25.00	7/17/58
Lead, St. L.	10.80	11.30	7/1/58
Lead, N. Y.	11.00	11.50	7/1/58
Magnesium ingot	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-200	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 116.

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MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	44.6	42.3	41.1	41.7
5052	52.0	46.9	45.2	44.4
6061-0	49.4	45.0	43.2	43.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	45.0-46.8	58.4-62.1
12-14	45.7-47.2	59.3-63.8
24-28	49.0-49.5	70.1-74.8
36-38	58.0-58.6	94.2-97.8

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	61.0	60.5	59.0	56.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade.. (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Chot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.13	.....	46.86	49.82
Brass, 70/30	43.57	44.11	43.51	46.48
Brass, Low	46.03	46.57	45.97	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83	.....	42.14	50.99
Muntz Metal	45.95	.....	41.76	.....
Comm. Bz.	48.30	48.84	48.24	50.86
Mang. Bz.	51.52	.....	45.74	.....
Phos. Bz. 5%	68.59	.....	69.09	.....

Free Cutting Brass Rod 30.28

TITANIUM

(Freight included in 5000 lbs)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; a loy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.55
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb).... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $228 to $231
Nickel oxide sinter at Cooper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz... $19 to $21
Platinum, dollars per troy oz... $62 to $70
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 88.625
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 27.00
- No. 120 ..... 26.25
- No. 123 ..... 25.75

80-10-10 ingot
- No. 305 ..... 31.25
- No. 315 ..... 29.25

88-10-2 ingot
- No. 210 ..... 38.25
- No. 215 ..... 34.00
- No. 245 ..... 30.75

Yellow ingot
- No. 405 ..... 22.75

Manganese bronze
- No. 421 ..... 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.00-24.25
- 0.60 copper max. 23.75-24.00

Piston alloys (No. 122 type)... 23.25-24.25
No. 12 alum. (No. 2 grade)... 21.00-21.75
108 alloy 21.50-22.25
195 alloy 24.00-25.50
13 alloy (0.60 copper max.)... 23.75-24.00
AXS-679 (1 pct zinc) 21.25-22.25

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.00-23.50
Grade 2—92-95% 21.00-21.75
Grade 3—90-92% 20.00-20.75
Grade 4—85-90% 17.00-18.00

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22½	21¾
Yellow brass	17	15¼
Red brass	19¾	19
Comm. bronze	20⅝	19⅞
Mang. bronze	15⅞	14⅞
Yellow brass rod ends	16¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	22¾
No. 2 copper wire	21½
Light copper	19
*Refinery brass	20¼
Copper bearing material	19⅛

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	22¼
No. 2 copper wire	21½
Light copper	19
No. 1 composition	19¼
No. 1 comp turnings	18¾
Hvy. yellow brss solids	14¼
Brass pipe	15¼
Radiators	15¾

Aluminum

Mixed old cast	12 —12½
Mixed new clips	14½—16
Mixed turnings, dry	12½—13

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	19¾—20¼
No. 2 copper wire	17¾—18¼
Light copper	15¾—16¼
Auto radiators (unsweated)	11½—12
No. 1 composition	15½—16
No. 1 composition turnings	14½—15
Cocks and faucets	12½—13
Clean heavy yellow brass	10¾—11¼
Brass pipe	13 —13¼
New soft brass clippings	13¼—13⅝
No. 1 brass rod turnings	11 —11¼

Aluminum

Alum. pistons and struts	5 — 5½
Aluminum crankcases	9 — 9½
1100 (2S) aluminum clippings	12½—13
Old sheet and utensils	9 — 9½
Borings and turnings	6 — 6½
Industrial castings	9 — 9½
2024 (24S) clippings	10½—11

Zinc

New zinc clippings	4 — 4½
Old zinc	3 — 3¼
Zinc routings	1¾— 2
Old die cast scrap	1½— 1¾

Nickel and Monel

Pure nickel clippings	42-45
Clean nickel turnings	37-40
Nickel anodes	42-45
Nickel rod ends	42-45
New Monel clippings	28-29
Clean Monel turnings	20-23
Old sheet Monel	25-26
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	6¾— 7
Battery plates (dry)	2¼— 2½
Batteries, acid free	1½— 1¾

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixer common babbitt	9½—10
Solder joints	13½—13¾
Siphon tops	42
Small foundry type	10½—10¾
Monotype	10¼—10½
Lino. and stereotype	9¼— 9½
Electrotype	8¼— 8½
Hand picked type shells	6¼— 6¾
Lino. and stereo. dross	2¼— 2½
Electro dross	1¾— 2

(Effective July 21, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	$77.50 *R3, B3*	$96.00 *R3, B3*	$114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *S10*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				
	Harrison, N. J.													15.05 *C11*
	Conshohocken, Pa.		$101.00 *A2*	$121.00 *A2*					4.975 *A2*		7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	$77.50 *B3*	$96.00 *B3*	$114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				
	Phoenixville, Pa.					5.325 *P2*		5.325 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$114.00 *N8*						7.60 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover, Ohio		$98.50 *R3*	$114.00 *R3, T5*						7.15 *G4*		10.45 *G4*		14.85 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$77.50 *U1, R3*	$96.00 *U1, R3,W8*	$114.00 *U1, R3,W8*	6.225 *U1*	5.275 *U1, W8,P13*	7.75 *U1,Y1 W8*	5.275 *U1*	4.925 *W8, N4,A1*	7.25 *A1,T8 M8*			8.10 *W8, S9,I3*	15.05 *A1, S9,G4*
	Cleveland, Ohio									7.15 *A5,J3*		10.45 *A5*	8.10 *J3*	
	Detroit, Mich.			$114.00 *R5*					4.925 *G3, M2*	7.15 *M2,D1, D2,G3,P11*	7.325 *G3*	10.60 *D2* 10.50 *G3*	8.10 *G3*	15.05 *G3*
	Anderson, Ind.									7.15 *G4*				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$77.50 *U1*	$96.00 *U1*	$114.00 *U1, Y1*		5.275 *U1, I3*	7.75 *U1, I3*	5.275 *I3*	4.925 *U1, I3,Y1*	7.15 *Y1*	7.325 *U1, I3,Y1*	10.60 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	$77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$96.00 *S1, C10*	$114.00 *C10,S1*					4.925 *R3, S1*	7.15 *R3,T4 S1*	7.325 *R3, S1*	10.50 *S1* 10.45 *R3*	8.10 *S1*	15.05 *S1*
	Owensboro, Ky.	$77.50 *G5*	$96.00 *G5*	$114.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$77.50 *U1, P6*	$96.00 *U1, C11,P6*	$114.00 *U1, C11,B7*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3,B4*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.225 *W3*	5.275 *W3*		5.275 *W3*	4.925 *W3*	7.15 *W3,F3*	7.325 *W3*	10.50 *W3*		
	Youngstown, Ohio	$77.50 *R3*	$96.00 *Y1, C10*	$114.00 *Y1*			7.75 *Y1*			7.15 *Y1,J3*	7.325 *U1, Y1*	10.65 *Y1*	8.10 *U1, Y1*	15.05 *J3* 10.65 *Y1*
WEST	Fontana, Cal.	$88.00 *K1*	$105.50 *K1*	$135.00 *K1*		6.075 *K1*	8.55 *K1*	6.225 *K1*	5.675 *K1*	9.00 *K1*				
	Geneva, Utah		$96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*						8.35 *S2*	
	Los Angeles, Torrance, Cal.		$105.50 *B2*	$134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*	9.05 *J3* 9.20 *C1*			9.30 *B2*	17.25 *J3*
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		$109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga.					5.475 *A8*			4.925 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$77.50 *T2*	$96.00 *T2*			5.275 *T2, R3,C16*	7.75 *T2*		4.925 *T2, R3,C16*		7.325 *T2*			
	Houston, Lone Star, Texas		$101.00 *S2*	$119.00 *S2*		5.375 *S2*	7.85 *S2*						8.35 *S2*	

(Effective July 21, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Coke* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*		6.15 *W6*	† Special coated m/g. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Conteaville, Pa.												
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*	6.25 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.45 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.35 *L1*			
	Ashland, Ky	4.925 *A7*		6.60 *A7*	6.625 *A7*								
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*									
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*			6.15 *A5, R3, W8, N4, K2*			
	Sterling, Ill.									6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3, J3*	8.975 *R3, J3*		6.15 *A5*			
	Detroit, Mich.	4.925 *G3, M2*	6.05 *G3 M2*				7.275 *G3*	8.975 *G3*					
	Newport, Ky	4.925 *A1*	6.05 *A1*										
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3, Y1*	6.05 *U1, I3, Y1*	6.60 *U1, I3*	6.625 *U1, I3, Y1*	7.00 *U1*	7.275 *U1, Y1, I3*	8.975 *U1, Y1*		6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.025 *G2*	6.15 *G2*	6.70 *G2*	6.725 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*						6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*							
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3, S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1, R3*	7.275 *R3*	8.975 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3, P6*	6.05 *U1, J3, P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, J3*	8.975 *U1, J3*	9.725 *U1*	6.15 *A5, J3, P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*							6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3, W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*		6.15 *Y1*			
WEST	Fontana Cal.	5.675 *K1*	7.30 *K1*				8.025 *K1*	10.275 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.025 *C7*											
	Kansas City, Mo.									6.40 *S2*			
	Los Angeles, Torrance, Cal.									6.95 *B2*			
	Minnequa, Colo.									6.40 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*						6.95 *C7*	$10.80 *C7*	$9.50 *C7*	
	Seattle, Wash.												
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2, R3*	6.60 *T2, R3*	6.625 *T2*					6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.40 *S2*			

(Effective July 21, 1958)

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE	
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs'. Bright	
EAST	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*						
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *B3*	5.10 *B3*		7.20 *B3*		7.65 *W6*	
	Claymont, Del.							5.10 *C4*		7.20 *C4*	7.625 *C4*		
	Coatesville, Pa.							5.10 *L4*		7.20 *L4*	7.625 *L4*		
	Conshohocken, Pa.							5.10 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*		
	Harrisburg, Pa.							5.10 *P2*	6.275 *P2*				
	Milton, Pa.	5.575 *M7*	5.575 *M7*										
	Hartford, Conn.			7.80 *R3*		9.875 *R3*	7.925 *B3*						
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*	
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*								
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*							
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.			7.85 *W10* 7.80 *J3*	6.55 *N8*	8.925 *N8*							
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*	
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*	
	Spring City, Pa.			7.75 *K4*		8.95 *K4*							
MIDDLE WEST	Alton, Ill.	5.625 *L1*										7.85 *L1*	
	Ashland, Newport, Ky.							5.10 *A7,A1*		7.20 *A1*			
	Canton, Massillon, Ohio	5.90* *R3*		7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*							
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8 B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N8,B5*	7.925 *U1,W8*	5.10 *U1,A1, W8,13*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1,W8*	7.65 *A5,R3, W8,N4, K2,W7*	
	Cleveland, Ohio Elyria, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13 C18*		8.775 *A5, C13, C18*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*	
	Detroit, Mich.	5.425 *G3*	5.425 *G3*	7.55 *P3* 7.50 *P8,B5*	6.475 *R5 G3*	8.775 *R5* 8.975 *B5,P3, P8*	7.925 *G3*	5.10*G3*		7.20 *G3*	7.625 *G3*		
	Duluth, Minn.											7.65 *A5*	
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 *U1,13, Y1*	5.425 *U1,13, Y1*	7.30 *R3,J3*	6.475 *U1,13, Y1*	8.775 *R3,M4*	7.925 *U1, Y1*	5.10 *U1,13, Y1*	6.175 *J3,13*	7.20 *U1,Y1*	7.625 *U1, Y1,13*	7.75 *M4*	
	Granite City, Ill.							5.20 *G2*					
	Kokomo, Ind		5.525 *C9*									7.75 *C9*	
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*	
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*		
	Madison, Ill.		5.625 *L1*										
	Owensboro, Ky.	5.425 *G5*			6.475 *G5*								
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11,B7*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3, B7*	7.625 *U1,J3, B7*	7.65 *A5, J3,P6*	
	Portsmouth, Ohio											7.65 *P7*	
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*					
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*	
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.90 *K1*		8.00 *K1*	8.425 *K1*		
	Geneva, Utah							5.10 *C7*			7.625 *C7*		
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*	
	Los Angeles, Torrance, Cal.	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.75 *P14*	8.625 *B2*					8.60 *B2*	
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*	
	Portland, Ore.	6.175 *O2*	6.175 *O2*										
	San Francisco, Niles, Pittsburg, Cal	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.60 *C7,C6*	
	Seattle Wash.	6.175 *B2,N6*	6.175 *B2*				8.675 *B2*	6.00 *B2*		8.10 *B2*	8.525 *B2*		
SOUTH	Atlanta, Ga.	5.825 *A8*	5.425 *A8*									7.65 *A8*	
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3, C16*	5.425 *T2,R3, C16*	7.90 *C16*			7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*	
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.20 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*	

* Special Quality (Effective July 21, 1958) † Merchant Quality—Special Quality 35¢ higher.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	⅛ In.		¼ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00								
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *L1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+1.00								
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Youngstown *R3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Fontana *K1*	+3.75		0.25		3.25		3.75		4.25		4.75		5.25									
Pittsburgh *J3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *L1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Sharon *M3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Pittsburgh *N1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Wheatland *W4*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Youngstown *Y1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50								
Lorain *N2*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ⅛, ¼ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective July 21, 1958)

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over ..... 10.5¢
F.O.B. Riverton or Camden, New Jersey, west of Miss. River .... 9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River ..... 10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River ..... 9.5¢
Canadian sponge iron, del'd in East, carloads ..... 10.5¢
Atomized iron powder, 98% + Fe, 40 mesh,, F.O.B. Easton, Pa., in 100 lb bags ..... 7.7¢
Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb. bags. Freight allowed east of Miss. River..... 10.5¢
Atomized iron powder, 98% + Fe. Cutting and scarfing grade, F.O.B. Easton, Pa. ..... 8.5¢
Electrolytic iron, annealed, imported 99.5+% Fe .... 27.5¢
domestic 99.5+% Fe .... 36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe 57.0¢
Electrolytic iron melting stock, 99.84% pure ..... 27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe..88.0¢ to $2.85
Aluminum, freight allowed.. 38.00¢
Brass, 10 ton lots .....31.1¢ to 47.1¢
Copper, electrolytic ..... 41.50¢
Copper, reduced .....40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd ... $5.00
Lead, f.o.b. Hammond, Ind. . 19¢
Manganese f.o.b. Extron, Pa. 46.0¢
Molybdenum, 99% .....$3.60 to $3.95
Nickel, chemically precipitated $1.05
Nickel, unannealed $1.00
Nickel, annealed $1.06
Nickel, spherical, unannealed #80 ..... $1.13
Silicon ..... 43.50¢
Solder powder .....13¢ plus met. value
Stainless steel, 302 ..... $1.02
Stainless steel, 316 ..... $1.30
Tin .....14.00¢ plus metal value
Tungsten, 99% (65 mesh) $3.15 (nominal)
Zinc, 5000 lb & over.....17.5¢ to 30.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
	Pct. Discounts			
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

	Full case or Keg price
Nuts, Hex, HP reg. & hvy.	
⅞ in. or smaller	60½
1 in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½
C. P. Hex, reg. & hvy.	
¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	46½
Semi-finished Hex Nuts	
⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
(Add 25 pct for broken case or keg quantities)	
Finished	
⅞ in. and smaller	63
Rivets	
	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws *Discount (Packages)*

	Full Finished H. C. Heat Treat	C-1018 Steel Full-Finished Cartons Bulk
New std. hex head, packaged		
¼" diam. and smaller x 6" and shorter	40	26
⅜", ⅞", and 1" diam. x 6" and shorter	22	3
¼" diam. and smaller x longer than 6"	8	+13
⅜", ⅞", and 1" diam. x longer than 6" .....+	6	+32
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish		
Cartons	60	60
Bulk — *Quantity*		
To ¼" diam. incl. — 25,000-and over	60	..
5/16 to ⅜" diam. incl. — 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk		
⅜" diam. & smaller — 25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots 40.00
Electrodeposited 32.75
Brass, 80-20, ball anodes, 2000 lb or more 45.50
Zinc, ball anodes, 2000 lb lots 16.50
(for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carbon, 5000 lb 1.0225
(Rolled depolarized add 3¢ per lb)
Cadmium 1.55
Tin, ball anodes $1.13 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 68.70
Copper sulphate, 100 lb bags, per cwt. 22.15
Nickel salts, single, 100 lb bags.... 36.00
Nickel chloride, freight allowed, 300 lb 42.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums 24.05
(Philadelphia price 24.50)
Zinc cyanide, 100 lb 60.75
Potassium cyanide, 100 lb drum N. Y. 48.00
Chromic acid, flake type, 10,000 lb or more 30.44

CAST IRON WATER PIPE INDEX

Birmingham 125.8
New York 138.7
Chicago 140.9
San Francisco-L. A. 148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 87, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (10 ga. & heav.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (18 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68	.....	.....	.....	.....
Baltimore	$.10	8.10	9.00	9.78	8.80	8.76	8.60	8.75	12.43	16.28	15.28	19.83	19.08
Birmingham		8.18	9.45	10.46	8.23	8.56	8.64	8.60	10.56*	.....	.....	.....	.....
Boston	.10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.28*	16.38	15.38	19.93	19.18
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.15*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	.15	8.49	9.65	10.25	8.89	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	.15	8.33	9.60	10.35	8.48	8.94	9.16	8.84	11.95*	15.89	14.89	19.29	18.69
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit	.15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		7.10	8.40	.....	7.25	7.70	7.25	7.20	11.10	16.20	15.25	19.65	18.95
Kansas City	.20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		8.25	10.30	12.10	8.90	8.85	8.70	8.75	12.10*	17.05	16.10	21.05	20.35
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12 11*	.....	.....	.....	.....
Milwaukee	.15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	13.31*	16.19	15.19	19.74	18.99
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.10	9.00	10.02	8.79	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91
Pittsburgh	.15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	16.00	18.50	17.45	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20	.....	17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	8.74	9.08	9.25	9.12	9.56	16.16	15.16	19.71	18.96
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ⅛" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective July 21, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.795	T-1
18	4	1	—	5	2.50	T-4
18	4	2	—	—	1.96	T-2
1.5	4	1.5	8	—	1.155	M-1
6	4	3	6	—	1.545	M-3
6	4	2	5	—	1.30	M-2

High-carbon chromium.. .925 D-3, D-5
Oil hardened manganese .475 O-2
Special carbon ..... .36 W-1
Extra carbon ..... .36 W-1
Regular carbon ..... .305 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

		Plate (*A3, J2, L4, C4*)			Sheet (*I2*)
	Cladding	10 pct	15 pct	20 pct	20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	37.95	42.25	46.70	40.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	57.00
	405	29.85	33.35	36.85	.....
	410	29.55	33.10	36.70	.....
	430	29.80	33.55	37.25	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	$.525	6.50	6.975				
Cleveland *R3*							14.75
So. Chicago *R3*				9.75			
Ensley *T2*	$.525	6.50					
Fairfield *T2*		6.50		9.75		6.60	
Gary *U1*	$.525					6.60	
Huntington *C16*		6.50					
Ind. Harbor *I3*	$.525		6.975	9.75		6.60	
Ind. Harbor *Y1*				9.75			
Johnstown *B3*		6.50					
Joliet *U1*			6.975				
Kansas City *S2*				9.75			14.75
Lackawanna *B3*	$.525	6.50	6.975			6.60	
Lebanon *B3*			6.975		14.50		14.75
Minnequa *C6*	$.525	7.00	6.975	9.75		6.60	14.75
Pittsburgh *P5*							14.75
Pittsburgh *J3*				9.75			
Seattle *B2*				10.25		6.75	15.75
Steelton *B3*	$.525		6.975			6.60	
Struthers *Y1*				9.75			
Torrance *C7*						6.75	
Williamsport *S5*		6.50					
Youngstown *R3*				9.75			

COKE

Furnace, beehive (f.o.b.) Net-Ton
Connellsville, Pa. .....$15.00 to $15.75
Foundry, beehive (f.o.b.)
$17.50 to $19.00

Foundry oven coke
Buffalo, del'd $31.75
Detroit, f.o.b. 30.50
New England, del'd 31.55
Kearney, N. J., f.o.b. 29.75
Philadelphia, f.o.b. 29.50
Swedeland, Pa., f.o.b. 29.50
Painesville, Ohio, f.o.b. 30.50
Erie, Pa., f.o.b. 30.50
Cleveland, del'd 32.65
Cincinnati, del'd 31.84
St. Paul, f.o.b. 29.75
St. Louis, f.o.b. 31.50
Birmingham, f.o.b. 28.85
Milwaukee, f.o.b. 30.50
Neville, Is., Pa. 29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

Gross Ton
Openhearth lump $12.70
Old range, bessemer 11.85
Old range, nonbessemer 11.70
Mesabi, bessemer 11.60
Mesabi, nonbessemer 11.45
High phosphorus 11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	....	9.625	....
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Special Motor	....	12.10	....
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55	Grain Oriented	
Trans. 58	16.05	Trans. 66	20 20
Trans. 52	17.10	Trans. 80	19.20
		Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*) $2 a ton higher; Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00) $135.00
No. 1 Ohio 120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill. 120.00
No. 2 Ohio 103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00) 21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. $150.00
Childs, Hays, Pa. 155.00
Chicago District 160.00
Western Utah 175.00
California 180.00
Super Duty
Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville 157.00-160.00
Silica cement, net ton, bulk, Latrobe 28.50
Silica cement, net ton, bulk, Chicago 25.50
Silica cement, net ton, bulk, Ensley, Ala. 26.50
Silica cement, net ton, bulk, Mt. Union 24.50
Silica cement, net ton, bulk, Utah and Calif. 37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt. $105.00
Standard chemically bonded, Curtiner, Calif. 115.00
Burned, Balt. 99.00

Magnesite Brick

Standard Baltimore $131.00
Chemically bonded, Baltimore 116.00

Grain Magnesite

St. ⅝ to ⅛-in. grains

Domestic, f.o.b. Baltimore in bulk. $73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.
in bulk 46.00
in sacks 52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:
Pa., W. Va., Ohio $16.75
Midwest 17.00
Missouri Valley 15.00

(Effective July 21, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	173	187	..	212	193	8.65	9.20
Aliquippa *J3****	173	190	..		190	8.65	9.325
Atlanta *A8***	175	192	..	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*	....	....	....	....	....	8.65	8.95*
Chicago *N4****	173	190	172	212	196	8.65	9.325
Cleveland *A6*	....	....	....	....	....	....	....
Cleveland *A5*	....	....	....	....	....	8.65	....
Crawf'dsv. *M4***	175	192	..	214	198	8.75	9.425
Donora, Pa. *A5*	173	187	..	212	193	8.65	9.20
Duluth *A5*	173	187	..	212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187	..	212	193	8.65	9.20
Galveston *D4*	9.10‡	....	....	....	....	....	....
Houston *S2*	178	192	..	217	198	8.90	9.45
Jacksonville *M4*	184-1	197	..	219	203	9.00	9.675
Johnstown *B3***	173	190	172	..	196**	8.65	9.325**
Joliet, Ill. *A5*	173	187	..	212	193	8.65	9.20
Kokomo *C9**	175	189	..	214	195*	8.75	9.30*
L. Angeles *B2****	....	....	....	....	....	9.60	10.275
Kansas City *S2**.	178	192	..	217	198*	8.90	9.45*
Minnequa *C6*†...	178	192	177	217	198†	8.90	9.45†
Monessen *P6*	....	....	....	....	193	8.65	9.20
Palmer, Mass. *W6*	....	....	....	....	....	8.95	9.50*
Pittsburg, Cal. *C7*	192	210	..	..	213	9.60	10.15
Rankin, Pa. *A5*	173	187	..	..	193	8.65	9.20
So. Chicago *R3*	173	187	..	..	193	8.65	9.20
S. San Fran. *C6*†	....	....	....	236	..	9.60	10.15†
Sparrows Pt. *B3***	175	....	....	214	198	8.75	9.425
Sterling, Ill. *N4****	175	192	172	214	198	8.75	9.425
Struthers, O. *Y1**	....	....	....	....	....	8.65	9.30
Worcester *A5*	179	....	....	....	....	8.95	9.50
Williamsport *S5*	....	....	....	....	....	....	....

* Zinc less than .10¢.
** 11-12¢ zinc.
*** .10¢ zinc.
† Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	....	....
Detroit *D1*	9.05	10.50	12.70	15.70	....
Detroit *D2*	9.05	10.50	12.70	....	....
Dover, O. *C4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	....	....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	....	....	12.90	16.10	19.30
Indianapolis *J3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C7*	11.15	12.60	14.80	17.80	....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Tronton, *R4*	....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	.....
	2½	12	48.94	57.31	.....
	3	12	56.51	66.18	.....
	3½	11	65.97	77.25	.....
	4	10	87.61	102.59	.....

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68 00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66 50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66 50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	74.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00 Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50-52.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*. Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*, McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*, Bridgeville, Pa., *U2*, Detroit, *M2*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *J3*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (.25¢ per lb higher); New Bedford, Mass., *R6*; Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*, Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1* Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A5*; Massillon, O., *R5*, S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A5*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown; *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R5*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*· Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective July 21, 1958)

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44 MOSTELLER RD., CINCINNATI 41, OHIO

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 27.50
0.025% C (Simplex) 36.75
0.10% C, 52-57% Cr, 2.00% max Si. 37.50
7-8½% max C, 50-55% Cr, 3-6% max Si 22.50
7-8½% max C, 50-55% Cr, 3% max Si 25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.31
0.50% max. C 1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads $1.29
Ton lots 1.31
Less ton lots 1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton (Bulk)	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.20	22.90
98% Si, 0.75% Fe	24.95	23.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk 7.70
Ton lots, packed 10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.20	75% Si....	16.40
65% Si....	15.25	85% Si....	18.10
	90% Si....	19.50	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective July 21, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots $4.00
Less ton lots 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $3.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy 35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

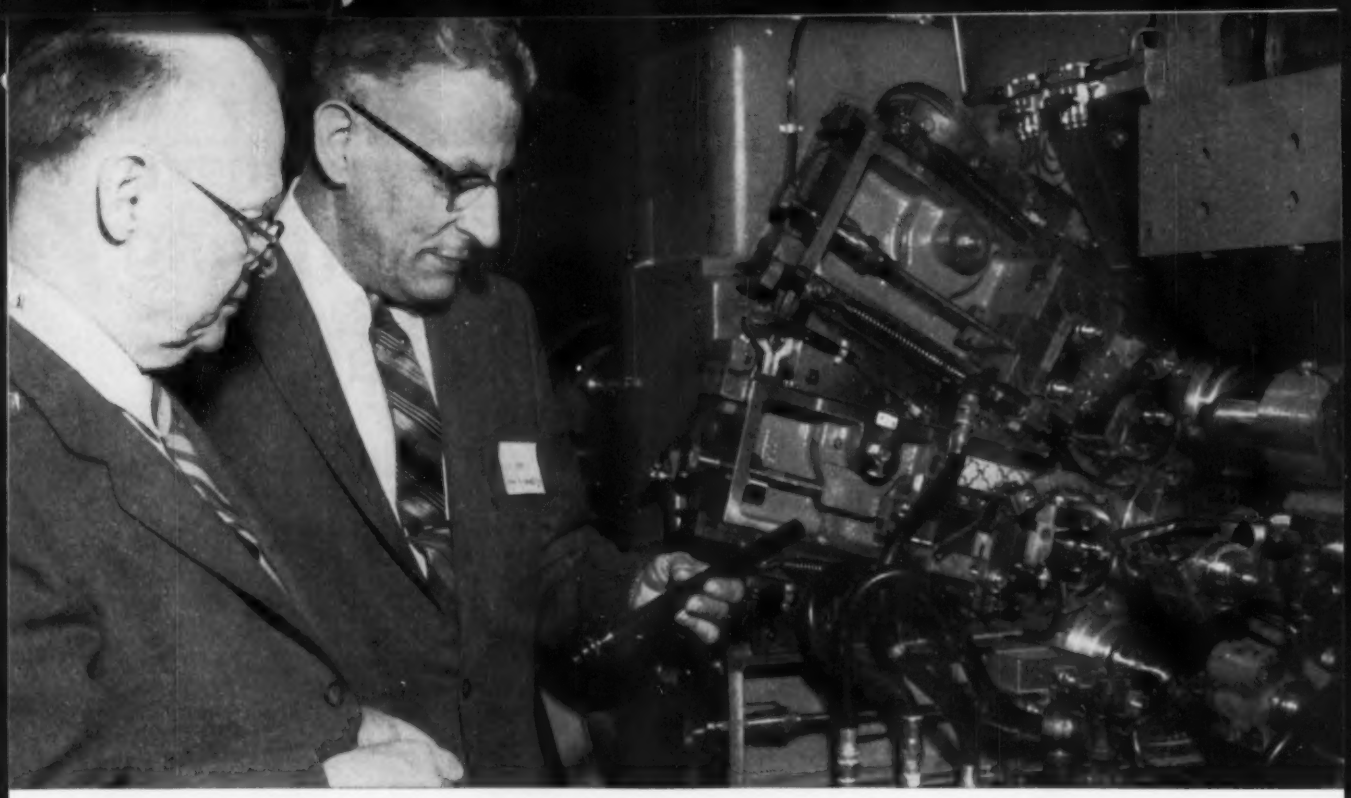
Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-6-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.. $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15



J. E. Loudon, of Cone Co. and COMAPRO Director, and Charles L. Kent of J&L, observe machining of spark plug shells from J&L 1¾" cold finished hexagons used in initial tests.

First COMAPRO tests prove fine machinability of J&L TYPE A LEADED STEEL

Spark plug shell production time cut 30%

Full utilization of the free-cutting capacity of J&L's Type A leaded steel was a key factor in the production increases reported during the first series of tests in the Cone Automatic Machine Company cooperative machining project known as COMAPRO. The conventional index time on a spark plug shell of about 6.5 seconds per unit was reduced to 4.41 seconds—approximately 30%—and the free machining quality of J&L leaded steel reduced time-consuming delays for tool changes.

The use of Type A leaded steel is spreading rapidly because of its superior machinability and machined finish. In actual production, the use of J&L's Type A leaded steel has increased overall production rates by 22%, reduced tool costs by 50%, and has required less power than making similar parts of conventional steel.

Jones & Laughlin was selected by the Cone Automatic Machine Co., Inc., Windsor, Vt., to be a co-sponsor of the COMAPRO cost-and-procedures analysis and to supply its Type A leaded steel bar stock in 13/16-inch cold finished hexagons for the first series of tests. The aim of this project is to develop more efficient methods of machining steel and to uncover wasteful machine shop practices. Data assembled under closely controlled conditions should eventually permit the development of optimum production set-ups for machining standard steel products at the lowest unit cost.

This new metal-working cost analysis project represents an important step forward in applied research. Jones & Laughlin, the *modern* steel company, is proud to be one of its co-sponsors.

SPARK PLUG SHELLS were selected as typical machined parts for first series of COMAPRO tests. The illustrated superior finish and 30% savings in unit production time are attributable in large part to the use of J&L's Type A leaded steel.

Jones & Laughlin Steel Corporation

STEEL

PITTSBURGH, PENNSYLVANIA

GUARANTEED
RE-NU-BILT
ELECTRIC POWER EQUIPMENT
A.C. MOTORS
3 phase—60 cycle

Qu.	H.P.	Make	Type	Volts	Speed
			SLIP RING		
1	1750	G.E.	M-579B8	4800	1800
1	1500	G.E.	MT	6600	1187
1	800	Whse.	CW	550	1776
1	700	A.C.		2300	500
1	600	Whse.	CW-4-32D-15	440	1778
1	500	G.E.	MT-413	2300	439
1	500	Whse.	CW	550	350
1	350	Cr. Wh.	Size 718R	208/416	1765
1	350	G.E.	IM-17A	220/440	720
1	350	Whse.	CW-10-39C-15	440	720
1	250	G.E.	IM-16	220/440	875
1	250	G.E.	MT-563Y	220/440	875
1	250	A.C.	Any	550	600
1	250	Whse.	CW	2200	150
1	250	Cr. Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4000	257
1	200	G.E.	IE-13B	220	1800
2	200	Whse.	CW-890	2300	1775
1	200	Whse.	CW-874D	220/440	885
1	200	Cr. Wh.	8R-29QB	440	505
2	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695
			SQUIRREL CAGE		
1	800	G.E.	KT-573	2200	1180
1	500	G.E.	FT-559AY	2200	3600
2	500	Whse.	C8-1115	2300	863/445
4	500	Whse.	C8-1216	2200	500
			C8-7151-		
1	400	Whse.	610H	6600/4000	3585
1	300	Whse.	C8-1002	2300/440	600
			C8-8558		
2	200	Whse.	D.P.	220/440	1750
1	150	G.E.	IK-15	2300	860
1	150	G.E.	FT-558	2200	875
1	150	Whse.	C8	440	580
1	125	Whse.	C8-764C	220/440	1160
3	100	Whse.	C8-760C	2200/440	1160
			SYNCHRONOUS		
1	6000	G.E.	ATI .8 P.F.	2200/6600	600
1	3500	G.E.	TS 1.0 P.F.	4600/2300/4000	360
1	2500	Whse.	.8P.F.	2300	720
1	2000	G.E.	ATI	2300	900
2	1750	G.E.	ATI	2300	3600
1	1750	G.E.	TS	2300/4600	900
1	735	G.E.	ATI	2200/12000	600
2	700	G.E.	TS .8P.F.	2200	1200
1	200	G.E.	IM	440/2200	580
1	350	Whse.	1.0P.F.	440	900
2	350	G.E.	ATI 1.0P.F.	2300	150
1	325	G.E.	ATI 1.0P.F.	440	1800
1	225	G.E.	ATI 1.0P.F.	440	1800

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Sales Are Improving On West Coast

Used machinery business has picked up speed in both California and Washington.

Customers show interest in good, late-model equipment selling at about half the cost of new machines.

■ Definitely up—that's the trend in the major West Coast used machinery markets. Dealers in the San Francisco - Oakland Bay Area, southern California, and Seattle say it's nothing startling. But sales are moving up.

Used machinery business in northern California has pretty much snapped out of its lethargy. Some dealers report second quarter sales are up as much as 25 to 30 pct. In fact, one dealer reports that business in April, May, and June exceeded anything he'd known in almost a year.

Good Sellers—Most of this business is due, he says, to the appearance on the market of machinery less than three years old. Selling at about half the price of new equipment, it still has many of the innovations found on later-model machines. So these tools find a ready, eager market.

How come these "three year olds" are on the market? Dealers claim some shops over-bought a few years ago and now find it a good time to trim back closer to their current needs.

Attractive Bargains — "We can offer a piece of equipment that sold for $60,000 three or four years ago for about $35,000," a leading dealer says in explaining why the sale of used machinery is "more active than new."

To the shop in the market, the three or four year old machines mean a sharply lower down payment. Financing is no particular problem today. However, it's still costly. Small operators pay six to seven pct, one dealer says.

Vertical turret lathes, tracer lathes and good milling machines find a quick buyer.

Lots of Activity—In Los Angeles, used machinery dealers report more calls, more live interest, and more sales. "We get a lot of drop-in trade that's looking around. That's something we haven't seen in a year or more," says a leading dealer.

Customers in southern California are looking for heavy duty engine lathes 20 in. and up. Most of these machines are for use in aircraft and missile manufacturing work.

Sheet metal equipment still holds a steady, top sales position. Machines are going into shops serving the building construction and electronics industries.

Revival in the North—The Seattle area used machinery business is undergoing a slow revival, as Boeing Airplane Co. activity and Alaska statehood kindle optimism.

Dealers report that, after a slow winter, demand again appears on the upswing for many items, notably heavier equipment. In Seattle, supply rarely outruns demand since suppliers order practically on the basis of an individual request. Although this is still the case, there are more requests for shears, heavy milling machines, and presses.

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5' x ¼" Bertsch Initial Type
11' x 5/16" Bertsch Initial Type
20' x ¼" Niles Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW

BRAKES—PRESS TYPE
10' x ¼" & 12' x ¼" Hydraulic—NEW

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton J&H	56' Span 220/3/60
5 ton Shepard Niles	70' Span 230 Volt D.C.
7½ ton Shaw	40' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	39' span 230 Volt D.C.
10 ton Milwaukee	57' Span 220 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10/3 ton P&H	47' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton Northern	54' Span 230 Volt D.C.
15 ton Shepard Niles	56' Span 230 Volt D.C.
20/5 ton Whiting	47' Span 220/3/60 A.C.
120 ton Shepard Niles	77' Span 220/3/60

DRAW BENCHES
3000 lb. Draw Bench, 20 ft. Pull
7000 lb. Draw Bench, 51 ft. Pull—New 1956
10,000 lb. Draw Bench, 51 ft. Draw

FORGING MACHINES
1" to 5" Acme, Ajax, National

GRINDER
No. 2 Cincinnati Centerless Grinder—NEW 1956

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.

HEADERS
#44 Waterbury Farrel DS OD, Capacity 5/16"
#250C Manville SS SD, Capacity ¼"

LEVELERS—ROLLER
37" Torrington, 19 Rolls 1 31/32" dia.
44" Newboldt, 9 Rolls 4 dia.
60" Aetna Standard, 17 Rolls 4⅜" dia.
72" McKay, 15 Rolls 4¼" Dia.

MILLING MACHINE—PLANER TYPE
42" x 42" x 14' Ingersoll 2 Rail & 2 Side Heads

PRESSES—HYDRAULIC
600 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes 36" Stroke, 48 x 45" Bet Cols.
1000 ton HPM Fastraverse, Bed 48" x 74", 36" Stroke
1500 ton Mesta Steam Hydr. Forging Press

PRESSES—STRAIGHT SIDE
190 ton Toledo #57½, 10" Stroke, Bed 20" x 29"
215 ton Clearing, 24" Stroke, Bed 36" x 42"

PRESS—TOGGLE DRAWING
#168¾ Toledo, 18" Stroke of Blankholder, 26" Stroke of Plunger, Bed 48" x 51"

PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ¾" x ¾"
Cleveland Style EF, Arch Jaw, Capy. 1¼" x 1"

ROLL—CORRUGATING
25 Stamco, Capy. 16 Ga. Material 12" long 36" wide

ROLLING MILLS
6" x 1" Three Stand Wire, Rolling Mill Complete with Pay Off & Recoiler
6" x 5" Torrington Flat Wire Mill Line
8" x 10" Single Stand Two High
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLL—FORMING
18 Stand Custom Built, 2⅛ Shaft, will take 36" wide

ROLLE—PLATE STRAIGHTENERS
10" Bertsch, Seven Rolls 9" Dia.
22" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ALLIGATOR
No. 4 Mesta RH LK, Capacity 2" x 12"

SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones

SHEAR LINE
36" x .020 Ga. Halldeu Shear Line

SHEARS—SQUARING
8' x 14 Ga. Edwards, Motor Drive—LATE
10' x ¼" Cincinnati
10' x ⅜" Niagara
14 x 3/16" Cincinnati #1814

SLITTERS
24" Blake & Johnson, 3½" Dia. Arbor
36" Yoder, 4½ Dia. Arbor
92" Mesta Slitting & Trimmer, Capacity 3/16"

STRAIGHTENERS
¼" Lewis 4C with 22 Ft. Cut off
Shuster Shape Straightener, Capy. 1" Hex. Sq. Rd.
Torrington 12-Roll Capy. 1⅜" Sq. Etc.
No. 0 Medart 2 Roll, Capacity ⅜"-1½" Bars
No. 3 Medart 3 Roll, Capacity to 4½" Tubing

SWAGING MACHINES
#6½A Fenn Capacity 3⅜" Tube 1¼" Solid
10" Die Length Hydraulic Feed, LATE

THREAD ROLLER
No. 100 Waterbury Farrel Thread Roller

UNCOILER
48" Paxson Hydraulic Uncoiler

WIRE DRAWING MACHINE
Type B Morgan 4-Block, Capy. #5 Rod down
Synero BBS-11 Fine Wire Drawing Machine with Spooler. Capable of starting size .028" dia. finish .003"
Scudder 3-Block 20", Capacity Start ¼"

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(2) 600 H.P., Allis Chalmers Motors, 600 V.D.C., 300/600 R.P.M.

(3) 3500 K.W., Allis Chalmers Motor Generator sets, 350/700 V.D.C. with 5000 H.P., 13800/6900 V motor & control

(1) 1875 K.W., Whse. motor generator set 250 V.D.C., with 2700 H.P., motor 13800/6900 V and control

(1) 1250 K.V.A., Whse Hi-Cycle Frequency Set, 800 V., 960 cycle, with 1875 H.P., 2300 V., syn motor complete with all switch gear

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1—3000# HEROULT—1200 KVA, 2300 V.
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DETROIT FURNACES—10 lb. to 3000 lb. Cap.

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#11 BUFFALO Bar Shear, 4" capacity
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2—28" 3-HIGH ROLL STANDS with inlet, outlet and intermediate tables. Will produce 4" sq. billets from 8" sq. blooms in 6 passes.
1—12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.
1—9" BAR MILL, 3-high.
1—Waterbury Farrel 6 head tandem rod mill for cold rolling wire.
2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.
1—UNCOILER, drag type, 60" maximum width, for cold mill.
1—34" x 192" ROLL GRINDER.
1—ROLL GRINDER, capacity rolls 46" dia. x 172"
2—65-TON ELECTRIC MELTING FURNACES, TOP CHARGE, with all electrical and mechanical equipment, including 15,000 KVA and 13,333 KVA transformers.
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2—PACK FURNACES for hot sheet mills, 62" x 60', double chamber.
2—90-TON HOT METAL TRANSFER CARS, Treadwell.
3—SLAG LADLE TRANSFER CARS, Blaw-Knox.
1—MORGAN INGOT STRIPPER CRANE, 50' span, 200 tons capacity, 230 volts D.C.
1—OPEN HEARTH CHARGING MACHINE, 5 ton capacity, 11' track gauge.
1—FLYING SHEAR FOR STRIP, Mesta, capacity hot mild steel 48" wide x ⅛" thick.
1—FLYING SHEAR FOR BARS, Morgan, up to 1½" square, moving at speeds up to 1800 FPM.
1—HALLDEN FLYING SHEAR LINE, capacity 36" wide x 20 to 34 gauge x 15" to 144" long.
1—PLATE SHEAR, MESTA, ½" x 156".
1—SHEET SQUARING SHEAR, capacity 156" x ¼".
1—SLITTING SHEAR FOR SHEETS, Mesta, 82".
1—42" SLITTER, Aetna-Standard.
1—UNITED HOT SAW, 50" dia. blade, sliding frame, 4'8" stroke.
1—ROLLER LEVELER, McKay, rolls 88" face x 5¼" dia. with gear box and universal spindles.
1—STRETCHER LEVELER for sheets, 500,000 lb.
1—STRAIGHTENER, MEDART No. 0 for round bars ½" to 1½" dia.
1—STRIP REEL, 20" dia. x 28" face, motor driven.
1—SHEET CORRUGATING MACHINE Streine 144", with 2 sets of dies.
1—3000 HP GEAR DRIVE, ratio 500 to 73.7 RPM.
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1—3000 HP GEAR DRIVE, ratio 16.2 to 1.
1—1200 HP GEAR DRIVE, ratio 5.92 to 1, 443 to 75 RPM.
1—1200 HP GEAR DRIVE, 353 to 94.6 RPM, 3.73 to 1 ratio.
1—25 HP SPEED REDUCER, Falk 21 to 1 ratio.
1—3500 HP MOTOR, 11000/6600 volts, 3 phase, 60 cycle, 514 RPM, synchronous, never used.
1—1200 HP MOTOR, 2200 volts, 3 phase, 60 cycle, 353 RPM, slip ring.
1—50 HP MOTOR, G.E. frame MD-610AE, 230 volts, D.C. 500 RPM.

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A

*Abell-Howe Co. 93
Abrams, Louis & Sons 129
Acco Registered Slings American Chain & Cable Co., Inc. 111
*Alco Products, Inc. .....28 & 29
*Allen Tool Corporation 131
Allied Research Products, Inc.... 50
Allis-Chalmers Mfg. Co. .....14 & 15
American Chain & Cable Co., Inc. ACCO Registered Slings 111
*American Manganese Bronze Co. 123
*American-Standard, Ross Heat Exchanger Division 20
*Armstrong-Blum Manufacturing Co. 62

B

Baldwin-Lima-Hamilton Corp., Standard Steel Works Div..... 66
*Bausch & Lomb Optical Company .....74 & 75
Belyea Co., Inc. 126
Bethlehem Steel Co. 1
Birdsboro Steel Foundry & Machine Co. 33
Blair & Co., Incorporated 92
*Blaw-Knox Co., Foundry & Mill Machinery Division 19
Boston Metals Company 130
Bristol Brass Corp., The 115
*Buffalo Forge Co. 21
Bullard Co., The 49

C

Calumet Iron & Supply Co..... 128
Camden Forge Co. 128
*Carlstrom Pressed Metal Co., Inc. 109
Carpenter Steel Co., The..... 104
Cities Service Oil Co..... 97
*Clark Controller Co., The..... 5
Cleveland Crane & Engineering Co. The Steelweld Machinery Div. 26 & 27
*Cleveland Worm & Gear Co..... 38
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div. 17 & 18
Consumers Steel & Supply Company 130
Continental Machinery & Equipment Co. 129
Copperweld Steel Co., Ohio Seamless Tube Division 98
*Cromwell Paper Co. 52

D

Decatur Casting Co. 109
*DeLaval Steam Turbine Co..... 107
*Dempster Brothers, Inc. 68
*DeVlieg Machine Co. .....30 & 31

E

Eastern Machinery Co., The..... 129
*Electric Furnace Co., the..... 96
Erie Foundry Co. 4

F

Falk Machinery Co. 127
Foote Bros. Gear & Machine Corp. 72
Foster, Frank B., Inc. 128
Foster, L. B., Company 10-128
*Fostoria Pressed Steel Corp., The 69
Foundry & Mill Machinery Div., Blaw-Knox Co. 19
Frank, M. K. 129

G

Gerson-Gersham 130
*Gleason Works 65
Goodman Electric Machinery Co. 129
Goss & DeLeeuw Machine Co. 131
Greenpoint Pipe Supply Corp. ... 129

H

*Harshaw Chemical Co., The 34
Henry, A. T., & Company, Inc. ... 127
Hetz Construction, Inc. 128
Hughes, Arnold Co. 128-129-130
Hyman, Joseph, & Sons 129

I

Ingersoll Steel Division, Borg-Warner Corporation 47
Iron & Steel Products, Inc. 126

J

Jones & Laughlin Steel Corporation .....91 & 125

K

Kinderman, Lou F. 128

L

Lang Machinery Co., Inc. 129
Luria Bros. & Co., Inc. 113

M

McNamar Boiler & Tank Co. 130
MacCabe, T. B., Co. 127
*MacLeod Co., The 123
Magnaflux Corporation 56
Malleable Founders' Society 95
Mesta Machine Co. Inside Front Cover
*Metal Carbides Corp. 132
*Metal & Thermit Corp. 55
Miles Machinery Co. 129
Milton Equipment Co. 129
Morgan Stanley & Co. 32

N

National Acme Co., The .....70 & 71
National Machinery Exchange .. 128
National Steel Corp. 73
*Noble Company 8

O

Ohio Seamless Tube, Div. of Copperweld Steel Co. 98
Olin Mathieson Chemical Corporation Metals Division 12
Ottemiller, Wm. H., Co. 131

P

Platt Bros. & Co., The 131
Purdy Company, The 130

R

*Republic Steel Corp. .....24 & 25
Revere Copper & Brass, Inc. 60
Ross Heat Exchanger Division, American-Standard 20
*Ruthman Machinery Co., The ... 13

S

Saginaw Steering Gear Division, General Motors Corporation .. 36
*Sandvik Steel, Inc. 58
Sharon Steel Corp. 6
Southern Screw Co. 9
*Spectrochemical Laboratories Inc. 11
Standard Oil Co. 76
Standard Steel Works Div., The Baldwin-Lima-Hamilton Corp... 66
*Steelweld Div., The Cleveland Crane & Engineering Co. ....26 & 27
Stump, Weldon F. & Co. 129

T

Trayer Products, Inc. 129
*True-Trace Sales Corp. 103
Tube Methods Inc. 94

U

Uffman, Leroy E. 130
Universal Machinery & Equipment Co. 127

V

Valley Steel Products, Inc. 130
*Valvoline Oil Co., Division Ashland Oil & Refining Co. 16
Verson Allsteel Press Co. Back Cover

W

Wallack Bros. 130
Weber Metal & Supply Co. 130
*Weirton Steel Co. 73
Weiss Steel Co., Inc. 130
Wheland Co. 64
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp. 17 & 18
*Wilson, Lee, Engineering Co., Inc. .....Inside Back Cover

Y

Youngstown Sheet & Tube Co., The 35

CLASSIFIED SECTION

Clearing House 126-130
Contract Manufacturing Appears in first and third issue of each month. See July 3 & July 17.
Employment Exchange 130
Equipment & Materials Wanted . 130

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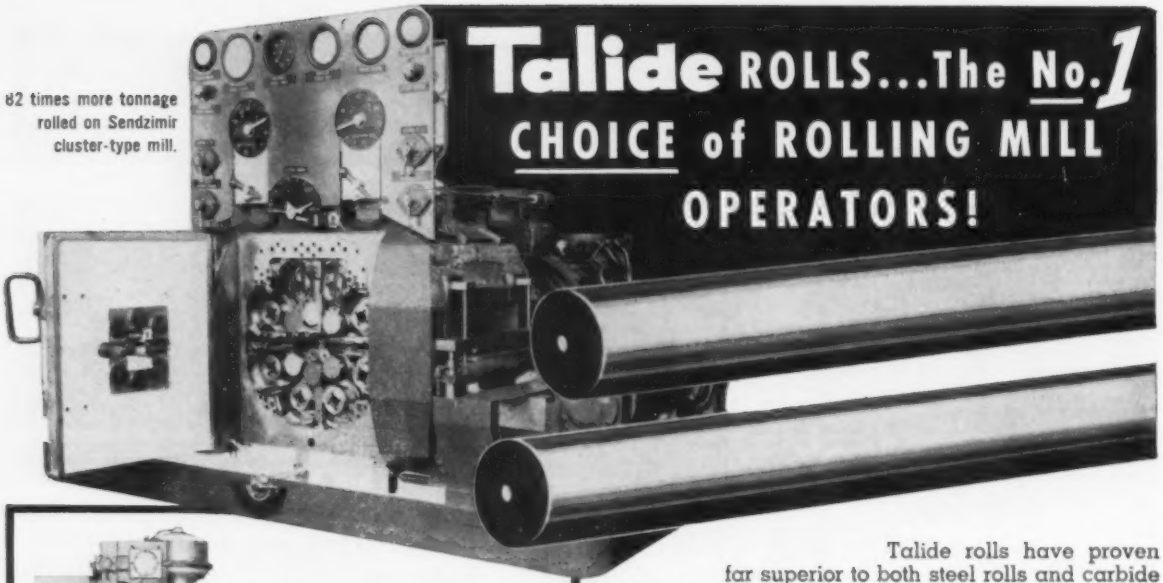

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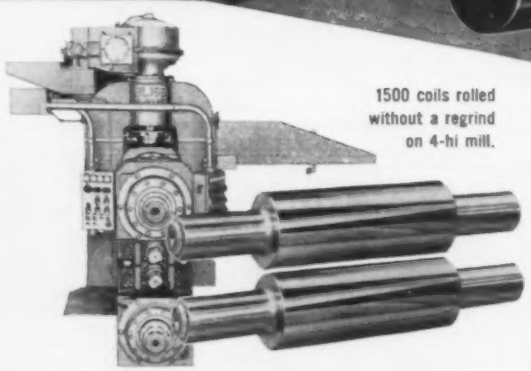

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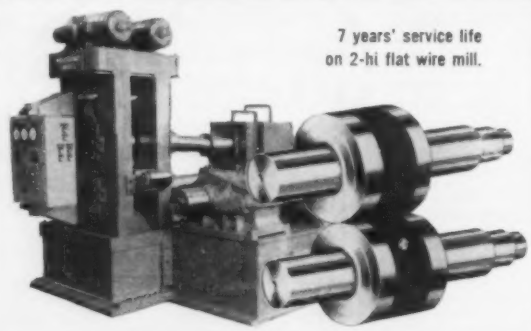

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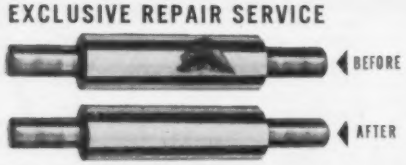

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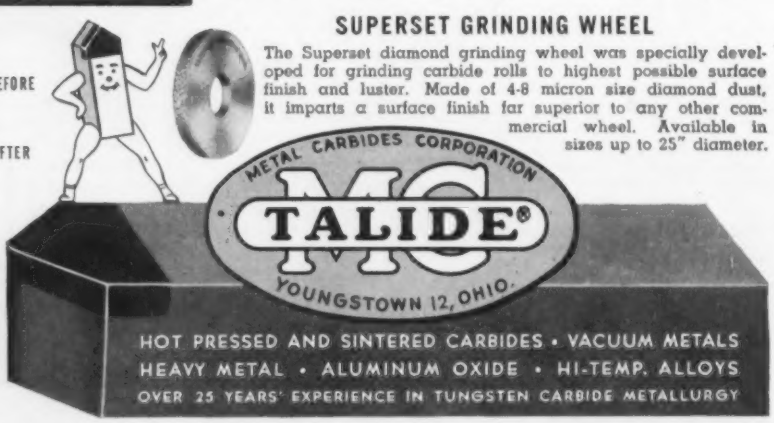
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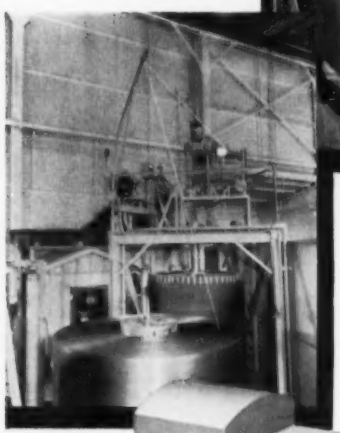
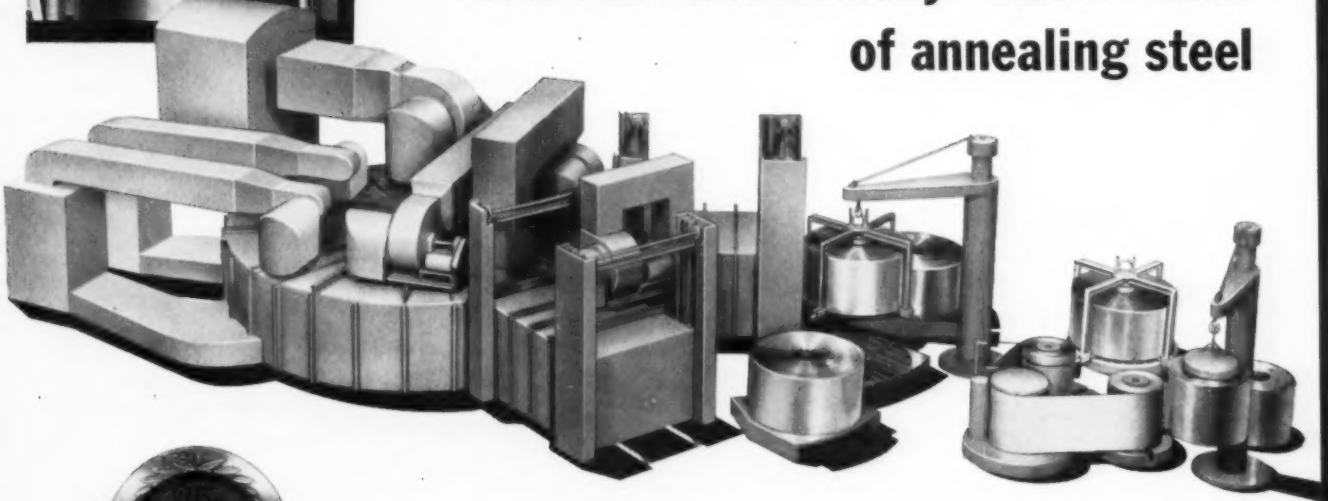
Right—Tight coil being opened. Note separator string being threaded into the coil.
Below—Separator string being removed from coil.



here it is...

the revolutionary opened coil annealer, designed by Lee Wilson ...it will substantially reduce costs of annealing steel



Methods of opening and handling opened coils, heart of New System

Lee Wilson engineers have developed a method for opening and handling opened coils that makes it possible to expose from 200 to 1000 times the area to heat. This means a faster, more uniform anneal. The new system, further, drastically reduces the expensive process inventory required in the annealing operation. There are many other important advantages to this revolutionary new system. Be sure you have all the facts. Write today for your copy of the Opened Coil Annealer brochure that explains the system in detail.

Opened coil being rewound into a tight coil after annealing.

2505

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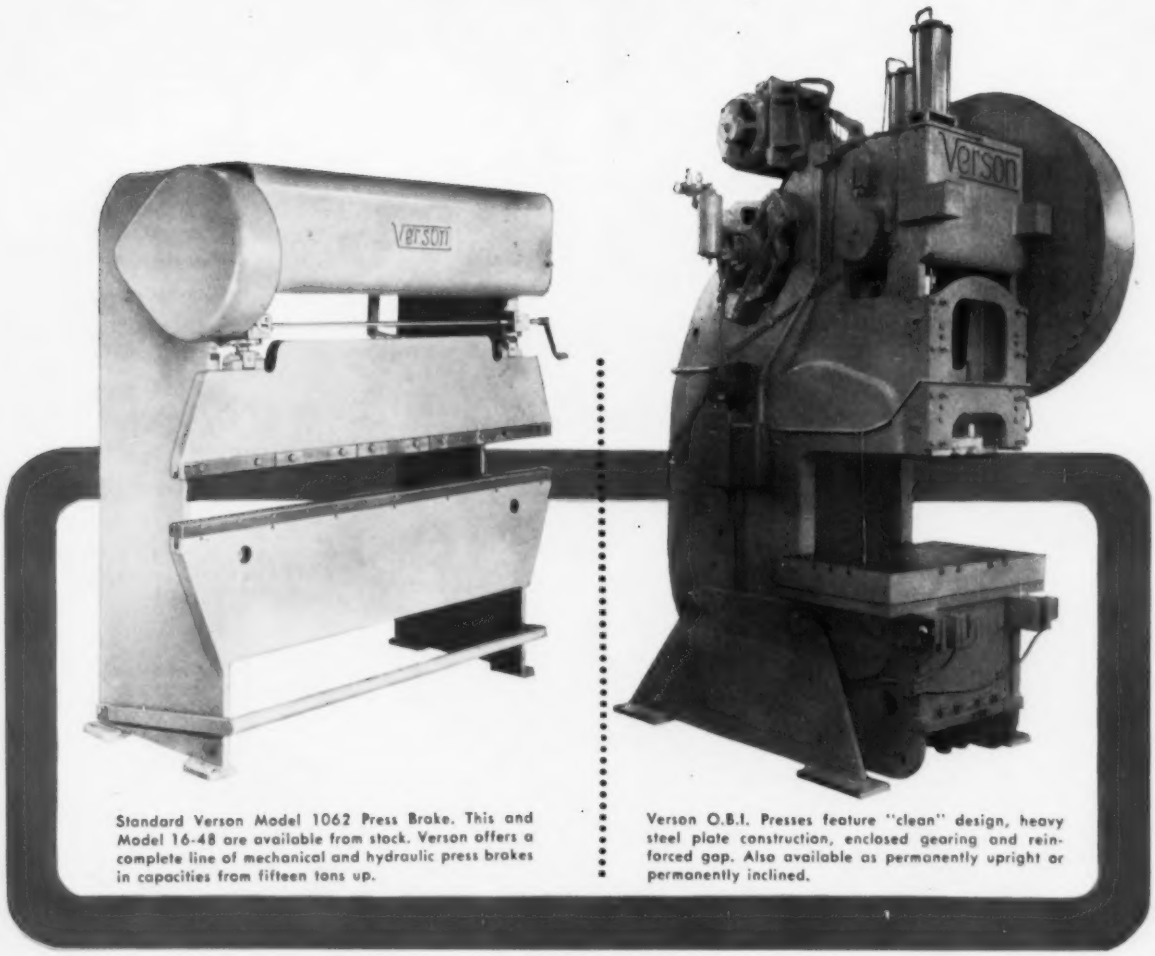
* ORIGINATORS AND LEADING PRODUCERS OF OPENED COIL AND SINGLE STACK FURNACES



Standard Verson Model 1062 Press Brake. This and Model 16-48 are available from stock. Verson offers a complete line of mechanical and hydraulic press brakes in capacities from fifteen tons up.

Verson O.B.I. Presses feature "clean" design, heavy steel plate construction, enclosed gearing and reinforced gap. Also available as permanently upright or permanently inclined.

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• Big performance . . . small cost . . . that's the story of Verson 16-48 and 1062 Press Brakes. If you're using a hand brake because you feel a power brake is too expensive or if you're tying up big machines to handle small odd jobs, now is the time to take a close look at these Standard Verson Press Brakes. Here are rugged, efficient power press brakes designed to do a man sized job at minimum cost . . . to bring the advantages of big brake performance to the smaller shop or to handle smaller jobs in the larger shop. Write for complete information.

• Verson Open Back Presses utilize design and construction features normally found only in big expensive machines. As a result, you get the highest standards of accuracy, efficiency and dependability. Verson's quality construction assures greater overall economy because it contributes so much to improved performance, long life and freedom from repairs.

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